II. ROUTINE MAINTENANCE ON LOCATION:

Self tests, which are programmed into the design of the game, are very helpful. As with any solid state piece of equipment the three prong grounding receptacle is an important piece part of the game, that must not be tampered with and must be used properly.

MPU MODULE SELF-TEST:

During power up, the MPU assembly test itself, which can visibly be seen by the flashing of a LED on the board. When the game is turned on, the LED comes on, flashes twice, pauses, then flashes six more times and goes out. Accompanying each flash is one note (Total of eight), this indicates proper MPU game operation conditions.

GAME SELF-DIAGNOSTIC TESTS:

Pressing the Self-Test button inside the coin door one time activates the game into its self-diagnostic test.

1. Burn in test — all outputs tested.
2. Feature lamps: All feature lamps will flash on and off continuously, determining any burnt lamps.
3. Pressing the Self-Test button again causes each digit on all displays to cycle from 0 thru 9, and repeat continuously.
4. Pressing the Self-Test button again causes each solenoid to be energized, one at a time, in a continuous sequence. Holding both flipper buttons "in" during this test will cause the flipper coils to be energized. The number appearing on the Player Score displays is the same as the number assigned to the solenoid. The sound of a solenoid pulling-in as a number appears indicates proper operation. The absence of a sound shows a fault. If sound is absent, see Solenoid I.D. page in game book for help in Solenoid identification.
5. Pressing the Self-Test button again causes the MPU to look at each switch assembly for stuck contacts.* If there are any stuck, the number of the first set encountered is flashed on the Player Score displays. The number remains until the fault is corrected. See Switch I.D. page in game book for help in Stuck Switch identification. Other numbers may follow if more stuck contacts are present. If there are no stuck switches, the Match/Ball in Play display flashes '0'. DO NOT BURNISH OR FILE GOLD PLATED SWITCH CONTACTS.

   * Flipper Button Switches are not included.
6. Pressing the Self-Test button eighteen more times causes the MPU to step thru the game levels and bookkeeping functions and finally to repeat the power-up test. To by-pass these functions, turn the game off, then on. The game is now ready to play, after the MPU Self-Test.

CONTACT SWITCH ADJUSTMENTS

All contact switches should be adjusted to have a gap of 1/16" in the open position, and have .010" overtravel closed. All contact switches (except for flipper button & flipper end of stroke) are plated to resist corrosion and, **SHOULD NOT BE FILED OR BURNISHED.** If contacts have dirt or dust on them, a clean piece of paper should be used to clean them, by closing the contacts and wiping gently.

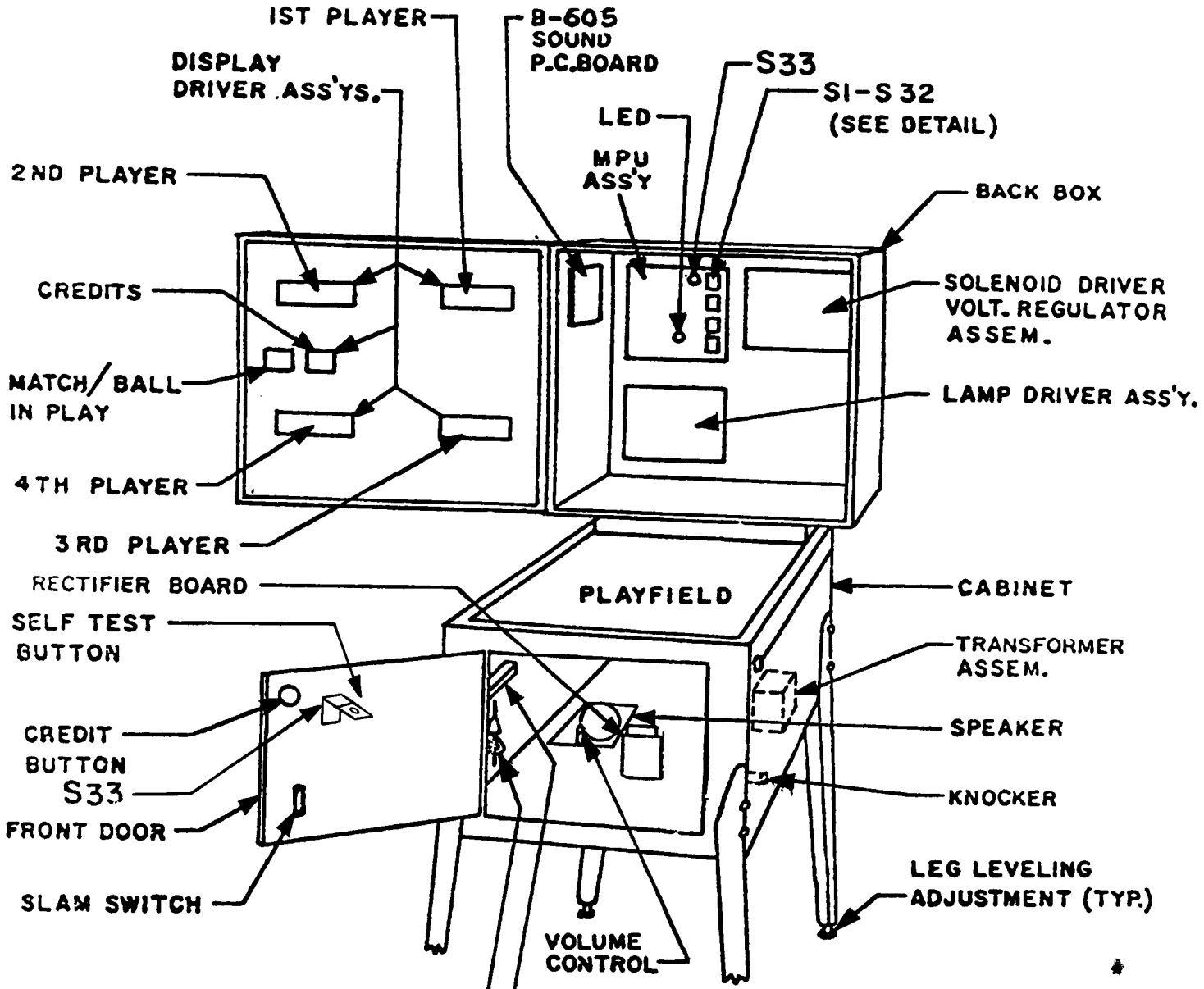
FLIPPER BUTTON & FLIPPER END OF STROKE SWITCHES ONLY. Tarnish or pitted contacts can be corrected with a contact file followed by a burnishing tool. Severely pitted contacts must be replaced as an assembly.

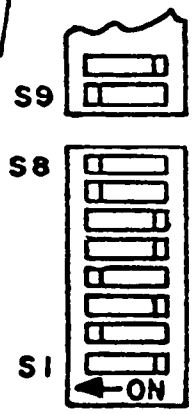
PLAYFIELD

Stern playfields have a durable long life playing finish. Its life expectancy, as well as playing appeal can be greatly extended by periodic cleaning. Inspect and hand polish the ball with a clean cloth. A chipped ball must be replaced, as it will ruin the finish on the playfield. Do not use water in large quantities, highly caustic cleaners, abrasive cleaners or cleaning pads on the playfield surface.

ELECTRONIC PIN BALL GAME

Figure 1





DETAIL S1-S32

MPU ASS'Y.

III. GENERAL GAME OPERATION

PLACE BALL INTO PLAYFIELD BY OUTHOLE:

COIN GAME. Coin should be rejected. Plug in line cord. For proper game operation grounding circuit must be used. Move power ON-OFF Toggle Switch at bottom right front corner of cabinet to "ON" position. The game will play a tune to announce game-readiness. Drop targets are reset, scores are reset to zero, alternating with the "High Game to Date", and the game is ready for play. Coin Game. The game should accept the coin and post credits* for coins accepted (Adjustable). Pressing the credit button on the door will cause the outhole kicker to move the ball to the shooter lane. The first player display will flash 00. A tune is played to announce play readiness.

One player is registered each time the credit button is pressed (one to four can play). The credits are reduced by one each time the credit button is pressed until the credits are reduced to zero. Credit button is in-operative after 4 players are registered. Shooting the ball initiates play. Thumper Bumpers score 1,000 points on 3 Ball. 100 points on 5 Ball. Slingshots score 10 points.

When the ball enters the outhole, the bonus score is added to the player's score. The player-up and/or ball in play on the back box is advanced one position. (The bonus score starts at 2,000 points). The outhole kicker moves the ball to the shooter lane and play is resumed. This continues until each player has played the allowable number of balls per game (3 or 5). At this time the "Game Over" light becomes lit. A random number appears and the "Match" light becomes lit. If the match number is the same as the last two digits in the player's score a free game is awarded.

Extra Ball won during the course of the game is played immediately after the player's regular ball enters the outhole. The player-up and/or ball in play are not advanced for extra ball play. Bonus score is added to the player's score and the bonus is set to 2,000 points before the game moves the extra ball for play.

At the end of the game, a "High Game to Date" is alternately flashed with all player scores. If the "High Game to Date" is beat, this feature* can award up to 3 free games.

Tilting the game results in loss of the ball in play. The flippers, thumper-bumper, etc., go "dead". Bonus score is not added. The purpose of the tilt penalty is to discourage the player from jostling the machine in an attempt to prolong play. Game action becomes normal after the outhole kicker moves the ball to the shooter lane.

Slamming the machine results in the loss of the game. All feature lights go out and the game becomes "dead" through a built-in time delay circuit. The purpose of the time delay circuit is to discourage abuse of the machine. After the delay, the "Game Over" light lites and the game readiness tune is played. The time delay occurs anytime one of the slam switches is made to contact.

There is a slam switch on the front door, one on the tilt board and one on the playfield. (Any number of slam switches could be installed by the operator, to meet his individual requirement). The switch should be adjusted to have approximately 1/16" gap between the contacts. The weighed blade should be adjusted to attain the desired sensitivity. Decreasing gap between contacts will make the switch more sensitive. Opening the gap will reduce sensitivity.

* Some tunes and features can be disabled by operator if so desired *** See back box adjustments.****

IV. SELF TEST AND BOOKKEEPING FUNCTIONS

The game is designed to help the operator perform certain diagnostic tests as well as accounting functions as follows:

IV.A. SELF TEST

TEST SWITCH PUSH NUMBER	BALL/MATCH DISPLAY	DESCRIPTION
1st		Burn in test - all outputs tested
2nd		Lamp test - all feature lamps on and off
3rd		Display test - all digits display 000000 thru 999999 then an 8 shifts from left to right
4th		Solenoid test - continuous sequence of solenoids pulsed with solenoid driver transistor, "Q" number displayed
5th	Flashing O if all switches open	Switch test - switch I.D. No. displays if closed

IV.B. BOOKKEEPING FUNCTIONS

TEST SWITCH PUSH NUMBER	BALL/MATCH DISPLAY	DESCRIPTION	DISPLAYS
6th	01	1st Threshold (High Score)	
7th	02	2nd Threshold (High Score)	
8th	03	3rd Threshold (High Score)	
9th	04	Current High Game Threshold	
10th	05	Current Credits	00 to 40
11th	06	Total Plays	00 to 999999
12th	07	Total Replays	00 to 999999
13th	08	Total times high score is passed	00 to 999999
14th	09	Number of coins thru Chute No. 2	00 to 999999
15th	10	Number of coins thru Chute No. 1	00 to 999999
16th	11	Number of coins thru Chute No. 3	00 to 999999
17th	12	Total balls played	
18th	13	Total Extra Balls Awarded	00 to 999999
19th	14	Total Playfield Special Awards	00 to 999999
20th	15	No. of Times Special (Sun Only) was Lit	00 to 999999
21st	16	Total level 1 passed	00 to 999999
22nd	17	Total level 2 passed	00 to 999999
23rd	18	Total level 3 passed	00 to 999999

V. FRONT DOOR GAME ADJUSTMENTS:

HIGH SCORE FEATURE ADJUSTMENTS:

The game is designed to award an extra ball or a free game (option) at three score levels. (See High Score Feature in game book). The recommended levels are on the score card on the game.

Any level from 10,000 or 990,000 can be set, as desired. It is also possible to reset or turn off (00) any or all of the levels, if desired.

1. Push and release Self-Test button at one second intervals six times or until number 01 appears on the Match/Ball in Play display.
2. The number on the Player Score Displays is the first score level*. It can be increased, if desired, by holding the credit button in. To decrease the score level, reset to '00', and then hold the credit button in. Release the credit button when the desired High Score appears. Note that the level changes 10,000 points at a time. If the number '00' is left on the displays, the high score feature is eliminated for that level.
3. Repeat steps 1 and 2 for the second and third high score levels. The number '02' and '03' on the Match/Ball-in-Play display are for the second and third levels, respectively.

NOTE: Only One Extra Ball Can Be Achieved Per Ball In Play.

HIGH GAME TO DATE FEATURE:

The game is designed to award up to 3 free games (option) when "High Game to Date" is beat. **For the recommended, factory present level**, see game book.

It is recommended that the level, which will build with game play, be periodically reset to the factory recommended level to encourage game play. The adjustment procedure is the same as for the High Score Feature Adjustment, Steps 1 and 2. Continue pushing the Self-Test button until the number '04' appears on the Match/Ball-in-Play display and then do Step 2.

Any level from '00' to 990,000 can be set as described. It is to be noted that '00' does not turn off the feature, as it does on High Score feature. The feature is turned off by positioning switches to the "OFF" position.

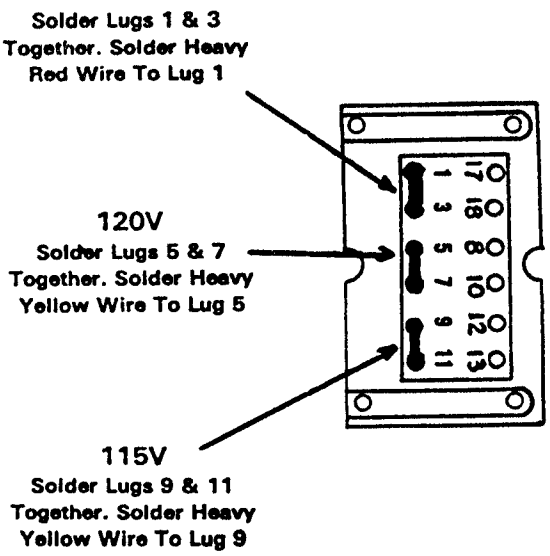
*Can be quickly set to '00' by pressing S33 on the MPU assembly in the back box.

	RECOMMENDED SETTING	
	3 BALL	**5 BALL**
1st Level—	380,000	700,000
2nd Level—	600,000	900,000
3rd Level—	———	———
High Score To Date	840,000	960,000
Instruction Card	12B-2-114-22	12B-2-114-22A
Planet Special Setting (SW 25, 26)	Saturn (On, On)	Pluto (Off, Off)

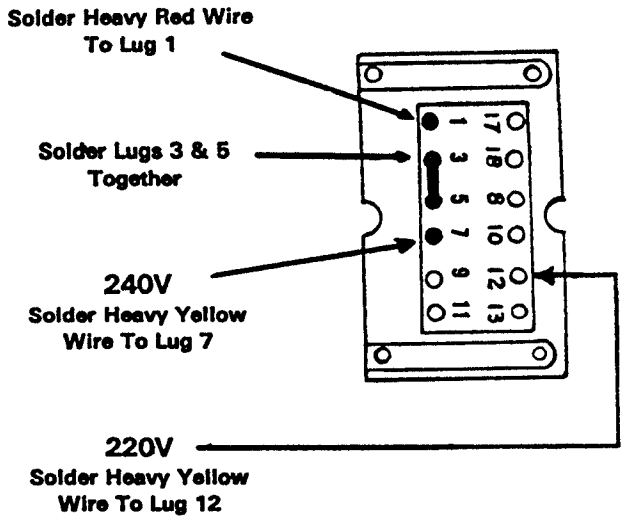
NOTE—For Five Ball Play it is recommended outlane posts be moved to conservative position (Open).

STERN 16B-6 TRANSFORMER WIRING CONNECTION INSTRUCTIONS

115/120V., 50/60 Cycle Input.
Varistor - Soldered to Line Filter on Left Side of Cabinet
Must Be Stern Part No. 25A-18-1.



220/240V., 50/60 Cycle Input.
Varistor - Soldered to Line Filter on Left Side of Cabinet
Must be Stern Part No. 25A-18-2.



VII. FEATURE OPERATION & SCORING

BONUS SCORE FEATURE:

A bonus score of 2,000 to 40,000 may be scored. The game starts with 2,000 bonus. The bonus is advanced by 2,000 points each time the ball goes thru a rollover lane at the top, rolls over star rollover buttons in the center of the playfield or any one of the four return lanes. The bonus score is collected when the ball enters the outhole. This feature is reset at the start of each ball.

STATIONARY TARGETS:

Targets score 500 plus
Upper Target will spot Upper right drop target (black)
Middle Target will spot Upper middle drop target (yellow)
Lower Target will spot Lower middle drop target (Blue)

STAR ROLLOVERS:

The star rollovers located in the middle of the playfield score 10 points and advance bonus.

SLINGSHOTS:

Slingshots score 10 points.

RETURN LANES & EXTRA BALL:

Outer Return Lanes score 2,000, Advance Bonus and spot next drop target (Red, Blue, Yellow or Black) when lit for possible planet advance. When G-A-L-A-X-Y is spelled for the first time the lanes lite alternately for extra ball (when made lites shoot again).

LEFT INNER RETURN LANE:

Scores 500 points advances bonus spots both (letter) X and red star drop target (lower left).

RIGHT INNER RETURN LANE:

Scores 500 points, advances bonus spots both (letter) Y and red star drop target (lower left).

OUTLANES & SPECIAL:

Left Out Lane:
Scores 5,000 (10,000 when the letter G is spotted) and spots the letter X.

Right Out Lane:
Scores 5,000 (10,000 when the letter X is spotted) and spots the letter Y.

When G-A-L-A-X-Y is spelled for the second time both lanes lite together or alternately (adjustable) for possible special award.

COLLECT BONUS:

When the ball enters the outhole the bonus score and multiplier is added to the player's score and the bonus is reset to 2,000.

TOP EJECT POCKET:

Eject Pocket score lit value, value is changed by top thumper bumper and spinner. Feature is reset to 2,000 when ball enters the outhole.

THUMPER BUMPERS:

Thumper Bumpers score 1,000 on 3 ball or 100 on 5 ball. In addition the top thumper bumper only advances eject pocket value.

ROLLOVER LANES:

Upper Rollover Lanes score 500 (5,000 when X & Y return lanes are made) and spot letters (G-A-L-A) in upper left kicker lane. This feature is carried over from ball to ball (memory).

KICKER LANE:

Each time one of the letters of G-A-L-A-X-Y is made using the rollover lanes the corresponding letter is spotted for additional score. The lane scores 3,000 plus 2,000 for each letter spotted (15,000 pts. max.) This feature is restored to its position from ball to ball and once made is on for the entire game for the player/players that made it.

SPINNER:

The spinner scores 100 (1,000 when bonus is 2,000-10,000-20,000-30,000 or 40,000) plus changes Top Eject Pocket Value.

DROP TARGET & SPECIAL:

Drop targets score 500 plus all down score the points indicated by lit planet.

Game starts at Mercury knocking all four down either direct or using stationary targets, and/or return lanes advances planet to Venus and lites 2X bonus multiplier.

In 3 ball
- 3X on at Mars, 4X on at Saturn
- 5X on at Neptune

In 5 ball
- 3X on at Jupiter, 4X on at Uranus
- 5X on at Pluto

Also Sun lites for possible Special at (adjustable) Saturn or Uranus or Neptune, or Pluto.

This feature is carried over from ball to ball for each player both position of planets and status of drop targets when ball entered outhole.

VII CREDIT/COIN AND GAME ADJUSTMENTS —

A. Playfield Post Adjustments:

Posts that control left and right outlane openings on playfield can be moved to make access to outlanes conservative or liberal for ball to enter. See Figure 2.

Conservative entry will decrease playing time and scoring.
Liberal entry will increase playing time and scoring.

B. Back Box Game Adjustments:

Each game has thirty-two switches located on the MPU module, located in the back box, that allows play to be customized to the location. See Figure 1. Credits per coin, maximum credits, credit display, balls per game, match feature, high game feature, special award and melody are selectable by means of switches. The switches contained in four-sixteen lead packages numbered S1-8, S9-16, S17-24, and S25-32 for easy identification. The "On toggle" position is marked on the assembly. TURN OFF POWER BEFORE MAKING ADJUSTMENTS. MAKE ADJUSTMENTS BEFORE TURNING POWER BACK ON.

GALAXY SWITCH ASSIGNMENT

32, 31	Special Award
30, 29, 28, 27	Coin Chute No. 1
26, 25	Special On Feature
24	"A" 's Feature
23	Attract Mode Sound Feature
22	Game Special Feature
21	Match Feature
20	Credit Display
19, 18	Max Credits
17	Extra Ball Bypass
16, 15	High Game To Date Feature
14	Background Sound
13, 9	Coin Chute No. 3
8	Kill Spot & Lights Feature
7	Ball Per Game
6	High Score Feature
5, 1	Coin Chute No. 2

CREDITS/COIN ADJUSTMENTS:

The #1 coin chute (next to hinge) is adjustable by means of switches 28-30 inclusive — Eight different credit ratios are available.

The credits given per coin are selectable by means of switches. 1-5 incl. for coin chute #2 and switches 9-13 incl., for coin chute #3. Thirty-one different credit ratios are available for each coin chute. The switch settings and resultant credits/coin are listed below:

CREDITS/COIN ADJUSTMENTS

COIN CHUTE	SWITCHES					CREDITS/COIN
#2 (CENTER CHUTE)	5	4	3	2	1	
OR #3 (RIGHT CHUTE)	13	12	11	10	9	
	OFF	OFF	OFF	OFF	OFF	3/2 COINS**
	OFF	OFF	OFF	OFF	ON	3/2 COINS**
	OFF	OFF	OFF	ON	OFF	1/COIN
	OFF	OFF	OFF	ON	ON	1/2 COINS*
	OFF	OFF	ON	OFF	OFF	2/COIN
	OFF	OFF	ON	OFF	ON	2/2 COINS*
	OFF	OFF	ON	ON	OFF	3/COIN
	OFF	OFF	ON	ON	ON	3/2 COINS*
	OFF	ON	OFF	OFF	OFF	4/COIN
	OFF	ON	OFF	OFF	ON	4/2 COINS*
	OFF	ON	OFF	ON	OFF	5/COIN
	OFF	ON	OFF	ON	ON	5/2 COINS*
	OFF	ON	ON	OFF	OFF	6/COIN
	OFF	ON	ON	OFF	ON	6/2 COINS*
	OFF	ON	ON	ON	OFF	7/COIN
	OFF	ON	ON	ON	ON	7/2 COINS*
	ON	OFF	OFF	OFF	OFF	8/COIN
	ON	OFF	OFF	OFF	ON	8/2 COINS*
	ON	OFF	OFF	ON	OFF	9/COIN
	ON	OFF	OFF	ON	ON	9/2 COINS*
	ON	OFF	ON	OFF	OFF	10/COIN
	ON	OFF	ON	OFF	ON	10/2 COINS*
	ON	OFF	ON	ON	OFF	11/COIN
	ON	OFF	ON	ON	ON	11/2 COINS*
	ON	ON	OFF	OFF	OFF	12/COIN
	ON	ON	OFF	OFF	ON	12/2 COINS*
	ON	ON	OFF	ON	OFF	13/COIN
	ON	ON	OFF	ON	ON	13/2 COINS*
	ON	ON	ON	OFF	OFF	14/COIN
	ON	ON	ON	OFF	ON	14/2 COINS*
	ON	ON	ON	ON	OFF	15/COIN
	ON	ON	ON	ON	ON	15/2 COINS*

* No credits until second coin dropped.

** One Credit for first coin. Two Credits for second coin provided that no scoring occured between 1st and 2nd coin drops. If scoring occured, second coin gives one credit.

COIN CHUTE #1

SWITCHES

30	29	28	27	CREDITS/COIN
OFF	OFF	OFF	OFF	1/1 Coin
OFF	OFF	OFF	ON	1/2 Coins
OFF	OFF	ON	OFF	2/1 Coin
OFF	OFF	ON	ON	2/2 Coins
OFF	ON	OFF	OFF	3/1 Coin
OFF	ON	OFF	ON	3/2 Coins
OFF	ON	ON	OFF	4/1 Coin
OFF	ON	ON	ON	5/1 Coin
ON	OFF	OFF	OFF	6/1 Coin
ON	OFF	OFF	ON	7/1 Coin
ON	OFF	ON	OFF	8/1 Coin
ON	OFF	ON	ON	9/1 Coin
ON	ON	OFF	OFF	10/1 Coin
ON	ON	OFF	ON	11/1 Coin
ON	ON	ON	OFF	12/1 Coin
ON	ON	ON	ON	14/1 Coin

GAME ADJUSTMENTS

1. HIGH SCORE FEATURE:

The game is designed to award an Extra Ball or Free Game at one, two or three high score levels. See Front Door Game Adjustments:

AWARD	SWITCH 6
Extra Ball	OFF
Replay	ON

2. BALL PER GAME:

No. of BALLS PER GAME	SWITCH 7
3	OFF
5	ON

3. SPOT LIGHTS FEATURE:

The game is designed with an option to control when the spot lites go off (welfare) — On at first ball, off at 2X (Unless not First Ball) On at succeeding balls if bonus multiplier less than 3X.

	SWITCH 8
Off Completely at 4X	OFF
Off Completely at 3X	ON

4. BACKGROUND SOUND:

The background sound during game play can be controlled as follows:

	SWITCH 14
OFF	OFF
ON	ON

5. HIGH GAME TO DATE FEATURE:

The game is designed to award up to 3 free games as an option of high score to date is beat. Each time this happens, the winning score becomes the new high game score to beat. This score is displayed on all 4 player score displays at the end of each game as an incentive to play.

	SWITCH 16	15
NOVELTY	OFF	OFF
1 Free Game	OFF	ON
2 Free Games	ON	OFF
3 Free Games	ON	ON

6. EXTRA BALL:

This option can be adjusted as follows:

	SWITCH 17
NO EXTRA BALL (BYPASS)	OFF
AWARD EXTRA BALL	ON

7. MAXIMUM CREDITS:

The maximum credits accepted by the machine limits the number of games that can be accumulated by coining, by winning replays or both. The maximum number of credits are adjustable by means of switches 18, and 19. Four credit limits are available. Switch settings are listed below:

MAXIMUM CREDITS	SWITCHES 19	18
10	OFF	OFF
15	OFF	ON
25	ON	OFF
40	ON	ON

8. CREDIT DISPLAY:

CREDITS DISPLAY	SWITCH 20
YES	ON
NO	OFF

9. MATCH FEATURE:

When the MATCH FEATURE is On, a random number appears in the "MATCH/BALL in PLAY" window and the word MATCH is illuminated. If the number matches the tens digit in a player's score a free game is awarded. The MATCH features creates an incentive to play.

MATCH	SWITCH 21
ON	ON
OFF	OFF

10. SPECIAL REPLAY LIMIT:

The number of replays made per game can be limited as follows:

REPLAYS	SWITCH 22
1 Per Ball	OFF
1 Per Game	ON

11. ATTRACT MODE SOUND:

When the game is not being played it can emit attract sounds.

	SWITCH 23
No Sounds	OFF
Sounds	ON

12. "A" FEATURE

Spotting G-A-L-A-X-Y can be made easier as follows:

	SWITCH 24
Lite Each A — Individually	OFF
Lite Both A's — Together	ON

13. DROP TARGET SPECIAL:

The position (planet) when the drop target special lights can be adjusted as follows:

	SWITCH 25	SWITCH 26
Special on at Pluto	OFF	OFF
Special on at Neptune	OFF	ON
Special on at Uranus	ON	OFF
Special on at Saturn	ON	ON

14. SPECIAL AWARD:

Award received when making the Sun special lite (from Drop Targets) when lit or outlanes (spotting G-A-L-A-X-Y twice) when lit can be adjusted as follows:

AWARD	SWITCH 31	SWITCH 32
No Award	OFF	OFF
Extra Ball	OFF	ON
100,000 POINTS,	ON	OFF
Replay	ON	ON

PARTS LIST
GAME #114 GALAXY

MISCELLANEOUS	PART NUMBER
Transformer (Domestic or Export)	16B-6
Transformer & Rectifier Board	B-438-2
Bulbs, #44	8A-101

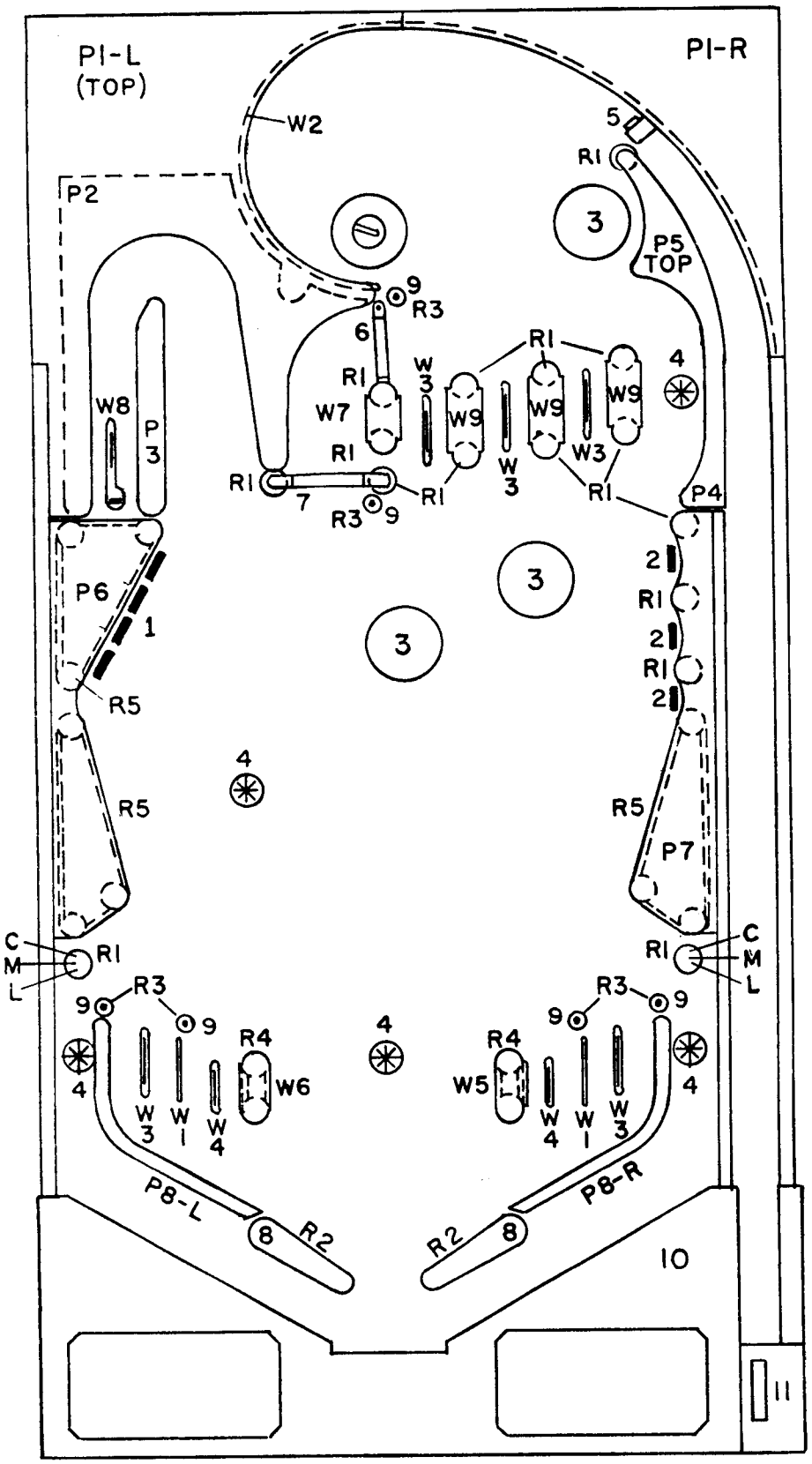
ASSEMBLY COILS	
Coin Lockout (1)	C-36-5300
Flipper Left & Right (2)	J-25-450/34-4500
Kicker	J-28-2300
Knocker	N-26-1200
Outhole Kicker (1)	J-26-1000
Saucer Eject	J-28-2300
Thumper Bumper (3)	J-26-1200
Slingshot (2)	J-27-1700
Drop Target Reset (1)	B-27-2300
Drop Target Reset (Each Target) 4	C1-34-3400

MODULES	
Lamp Driver	B-431
Display Driver (5 Used)	A-434
Solenoid Driver/Voltage Regulator	B-432
MPU	C-602-114
Rectifier Board	A-430
Sound Module	C-605

PLAYFIELD PARTS ..... **SEE PLAYFIELD DIAGRAM**

PLAYFIELD PARTS

GALAXY



RUBBER RINGS

R1-7A-120-031
R2-7A-121-W
R3-7A-125
R4-7A-120-100
R5-7A-120-300

BALL GUIDES & ROLL-OVERS

W1-6A-101-G
W2-6C-230
W3-A-149
W4-A-383
W5-4A-110-R
W6-4A-110-G
W7-4A-121-R
W8-A-581
W9-4A-224-R

PLASTIC SHIELDS

TOP ARCH SET 13C-114-1R-&1L
GALAXY SET 13C-114-2-TO-8 (P1 TO P8)

MISC. PARTS & ASSEM'S.

1. 4-BANK TARGET D-548-4A
2. TARGET ASSEMBLY A-469-Y-BL-B
3. THUMPER CAP 13A-12-5
4. ROLLOVER BUTTON 4B-275
5. BALL GATE A-104-R2
6. 1-WAY GATE ASS'Y A-644
   (WIRE FORM 6A-257)
7. SPIN TARGET ASS'Y A-563-10
   (TARGET & WIRE ONLY 14A-7-9)
8. FLIPPER & SHAFT ASS'Y A-193
9. BALL GUIDE POST 2A-200
10. INSTRUCTION PLATE 14B-3-2
11. SHOOTER GAUGE 14A-2-5

POST ADJUSTMENT:

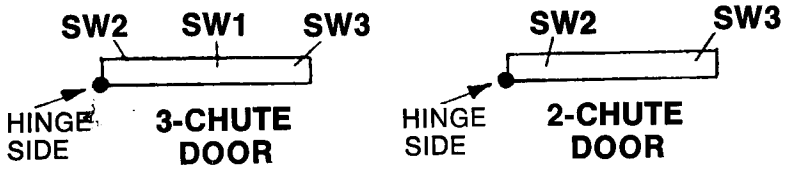
C—CONSERVATIVE
M—MEDIUM
L—LIBERAL

GALAXY
SWITCH IDENTIFICATION
Self Test Display Numbers

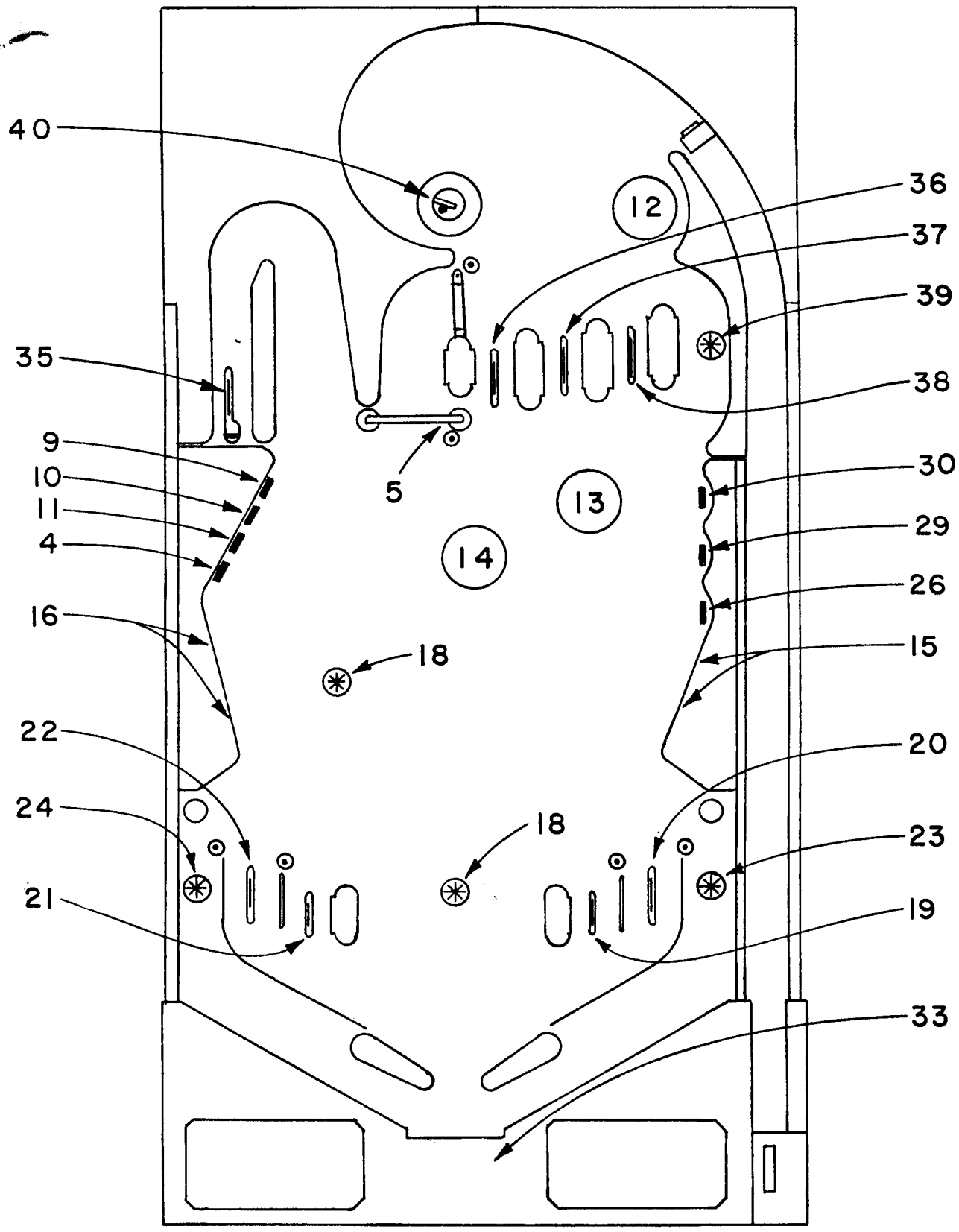
SWITCH NO.	SWITCH LOCATION
1	CHUTE }
2	CHUTE } SEE DIAGRAM BELOW
3	CHUTE }
4	DROP TARGET (RED)
5	SPIN TARGET
6	CREDIT BUTTON
7	TILTS
8	SLAM & VIB. TILTS
9	DROP TARGET (GREEN)
10	DROP TARGET (YELLOW)
11	DROP TARGET (BLUE)
12	TOP THUMPER
13	LOWER RIGHT THUMPER
14	LOWER LEFT THUMPER
15	RIGHT SLING-SHOT
16	LEFT SLING-SHOT
17	OPEN
18	CENTER ROLL-OVER BUTTONS (2)
19	RIGHT RETURN LANE
20	RIGHT MIDDLE LANE

SWITCH NO.	SWITCH LOCATION
21	LEFT RETURN LANE
22	LEFT MIDDLE LANE
23	RIGHT OUT-LANE (R.O.B.)
24	LEFT OUT-LANE (R.O.B.)
25	OPEN
26	STAND-UP TARGET (BLUE STAR)
27	OPEN
28	OPEN
29	STAND-UP TARGET (YELLOW STAR)
30	STAND-UP TARGET (GREEN STAR)
31	OPEN
32	OPEN
33	OPEN
34	OPEN
35	BALL KICKER
36	TOP LEFT ROLL-OVER WIRE
37	TOP MIDDLE ROLL-OVER WIRE
38	TOP RIGHT ROLL-OVER WIRE
39	TOP RIGHT ROLL-OVER BUTTON
40	SAUCER

NOTE: FLIPPER BUTTON CABINET SWITCHES DO NOT APPEAR ON TEST



SWITCHES
GALAXY



SWITCHES NOT ON PLAYFIELD:

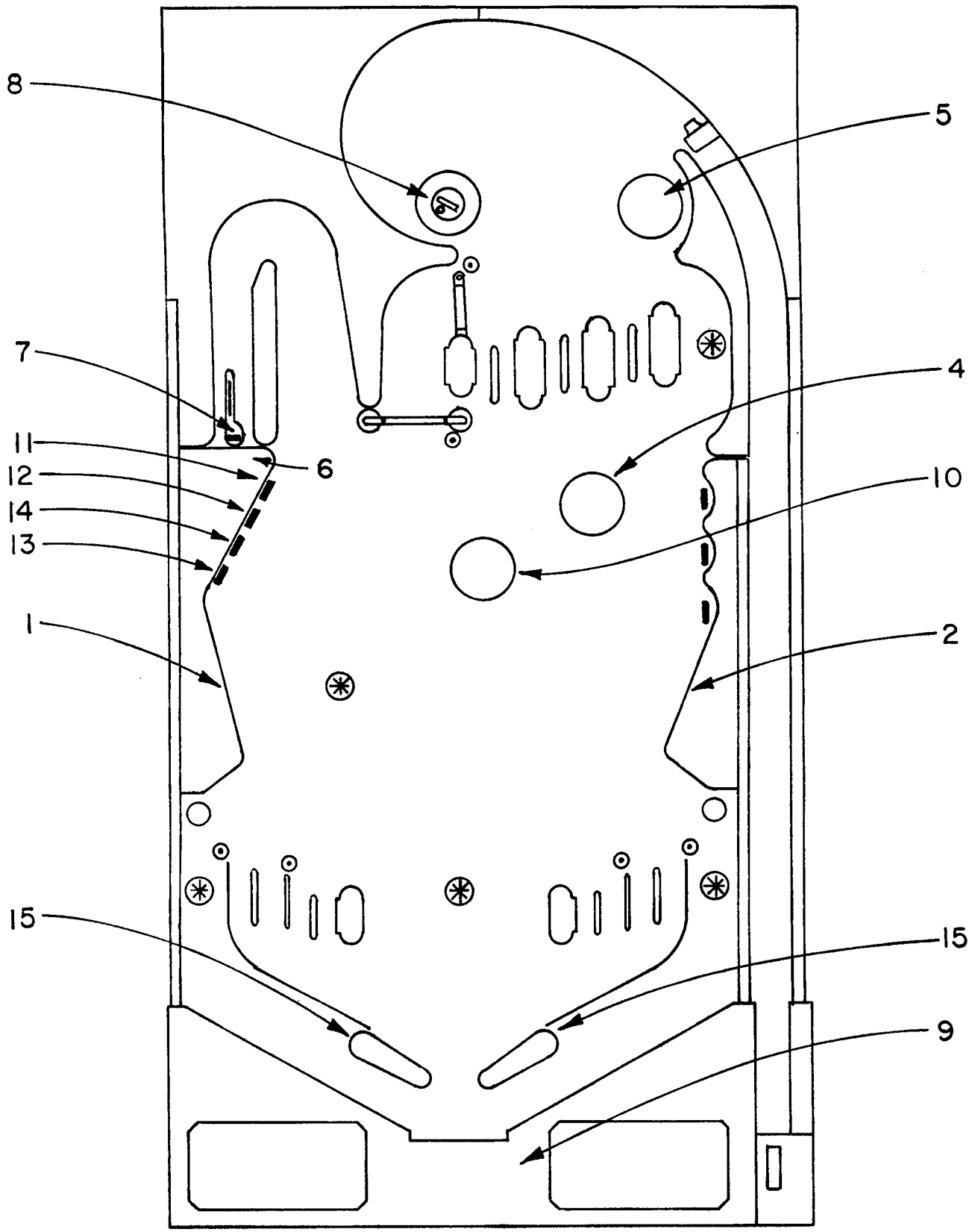
1 *CENTER CHUTE
2 *LEFT CHUTE
3 *RIGHT CHUTE
6 CREDIT BUTTON
7 ROLL-TILT
7 PENDULUM
8 TILT BOARD
8 DOOR & PLAYFIELD VIB.

* SEE DRWG. ON SWITCH IDENTIFICATION PAGE

GALAXY
SOLENOID IDENTIFICATION
SELF TEST DISPLAY NUMBERS

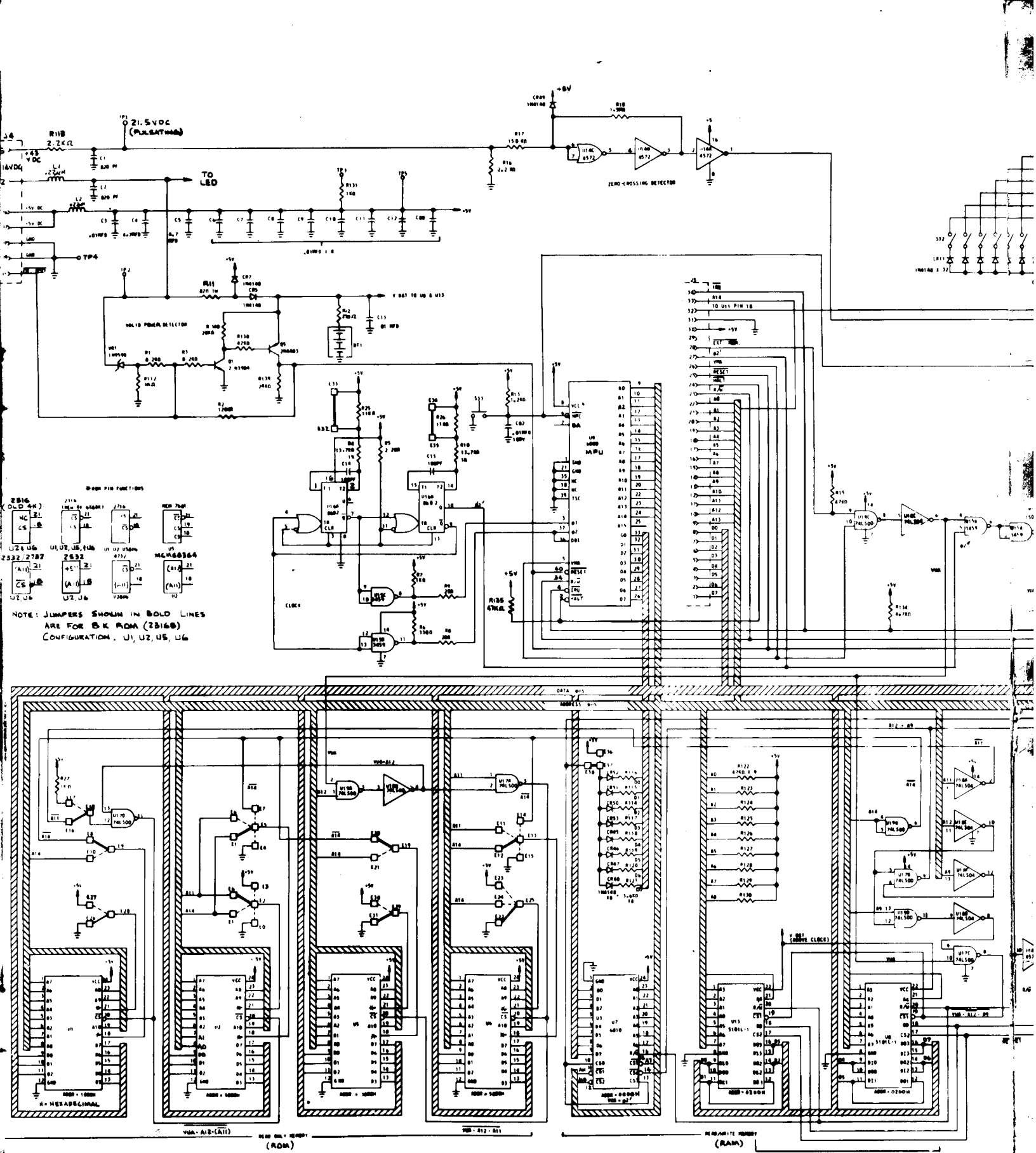
SOLENOID NO.	SOLENOID LOCATION
1	LEFT SLING-SHOT
2	RIGHT SLING-SHOT
3	KNOCKER
4	LOWER RIGHT THUMPER
5	TOP THUMPER
6	DROP TARGET RESET
7	BALL KICKER
8	SAUCER EJECT.
9	OUT-HOLE
10	LOWER LEFT THUMPER
11 THRU 14	4-BANK DROP TARGET
15	RIGHT & LEFT FLIPPERS
16	OPEN
17	OPEN
18	OPEN
19	COIN LOCK-OUT
20 THRU 29	SOUND

SOLENOIDS
GALAXY



SOLENOIDS NOT ON PLAYFIELD:

3-KNOCKER 19-COIN LOCK-OUT

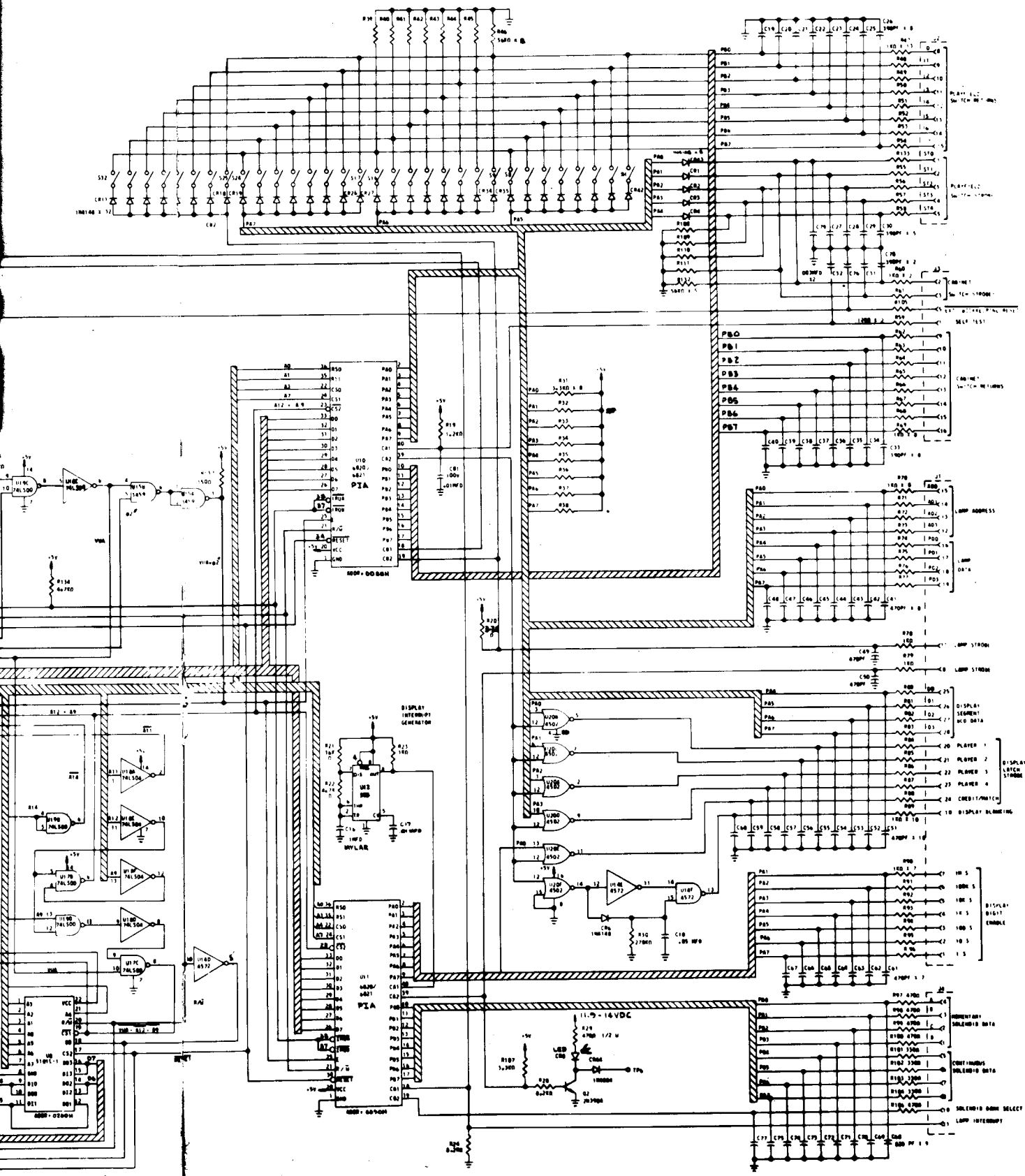


8 K E-PROM (2716 INTEL)
JUMPER COMBINATIONS

E2 - E3	E23 - E25
E5 - E7	E27 - E28
E9 - E10	E29 - E30
E13 - E14	E32 - E33
E16 - E18	E34 - E36
E19 - E21	

2B-602-S

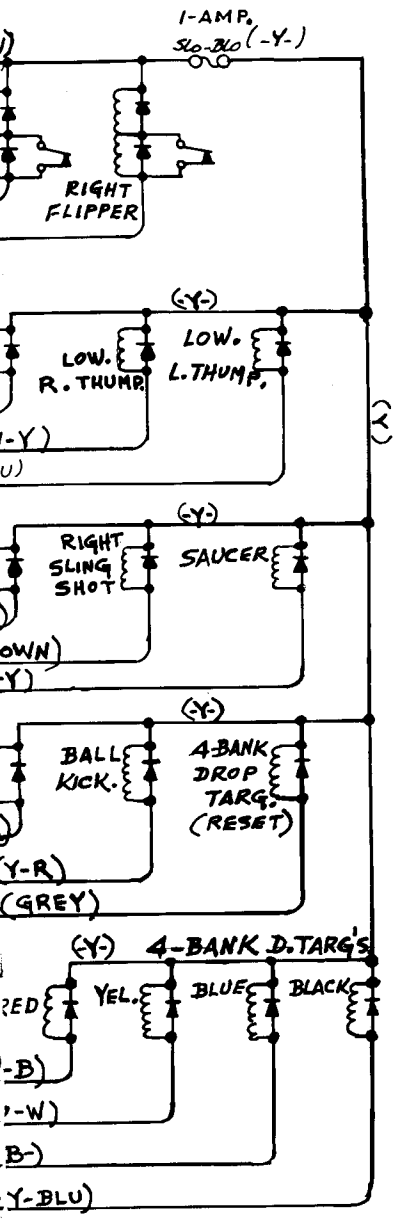
12B-602-S



STERN ELECTRONICS INC.

1725 DIVERSEY BLVD. CHICAGO 60614

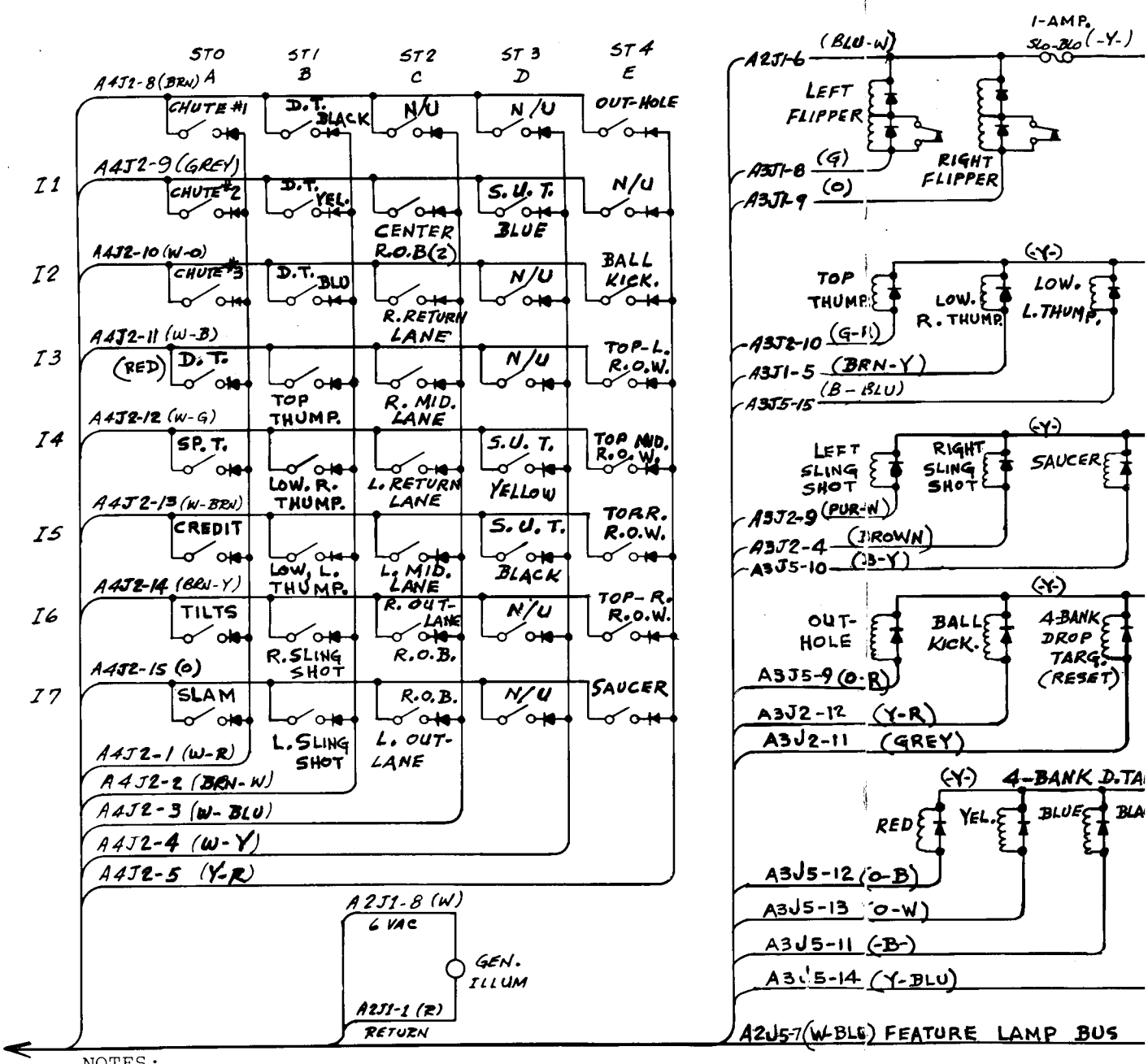
MPU 200 SCHEMATIC



DESCRIPTION	WIRE COLOR	JACK A PIN LDA-J1	NO.
"A" ROLL-OVER	Y-BLU	J3	17
"A" ROLL-OVER (2)	BLU-W	J1	23
"G" ROLL-OVER	W	J3	11
BONUS 2	Y-G	J3	2
BONUS 4	W-BLU	J1	13
BONUS 6	BRN-R	J1	6
BONUS 8	B-W	J1	28
BONUS 10	R-W	J3	4
BONUS 20	O-W	J3	27
BONUS 30	Y-G	J1	7
BONUS 40	B	J1	16
GAME OVER	GREY-W	J2	11
HIGH SCORE TO DATE	GREY-O	J2	22
JUPITOR	GREY-Y	J1	15
"A" KICKER	R-Y	J3	25
"A"2 KICKER	GREY-G	J1	19
"G" KICKER	O-R	J3	12
"L" EXTRA BALL	BLU-O	J1	5
"L" KICKER	GREY-	J1	9
"L" ROLL-OVER	R-G	J1	3
L. SPECIAL	GREY-B	J3	10
"X" KICKER	G-R	J3	1
"Y" KICKER	B	J3	26
MARS	GREY-BLU	J1	10
MATCH	GREY-Y	J2	1
MERCURY	G	J3	3
NEPTUNE	PUR-W	J1	2
PLUTO	GREY-O	J1	14
SATURN	W-R	J3	9
R. SPECIAL	B-G	J3	21
R. EXTRA BALL	BRN-BLU	J1	24
SPOT "X"	G-B	J1	8
SPOT "Y"	PUR	J1	17
SPOT No.	PUR-Y	J1	8
SAME PLAYER SHOOTS AGAIN	GREY-R	J1	26
	GREY-R	J2	21
SUN SPECIAL	BLU-R	J1	1
SPIN	BRN-B	J1	18
TILT	GREY-B	J2	10
TOP 2,000	B-W	J2	3
TOP 4,000	PUR-B	J2	4
TOP 6,000	W-Y	J2	12
TOP 8,000	GREY-G	J2	13
TOP 10,000	B-Y	J2	5
10X SCORE	GREY	J2	9
URANUS	R-B	J3	16
VENUS	W-GREY	J3	23
2X	R-BLU	J3	18
3X	W-O	J3	20
4X BONUS	B-O	J1	11
5X BONUS	PUR-B	J1	25
"X" ROLL-OVER	W-B	J3	15
"Y" ROLL-OVER	B-R	J3	19

HAYFIELD

...ERONICS INC.	
...ED. CHICAGO 60614	
APAM	
...T 6-11-79	AM'T
	APPR.



NOTES:

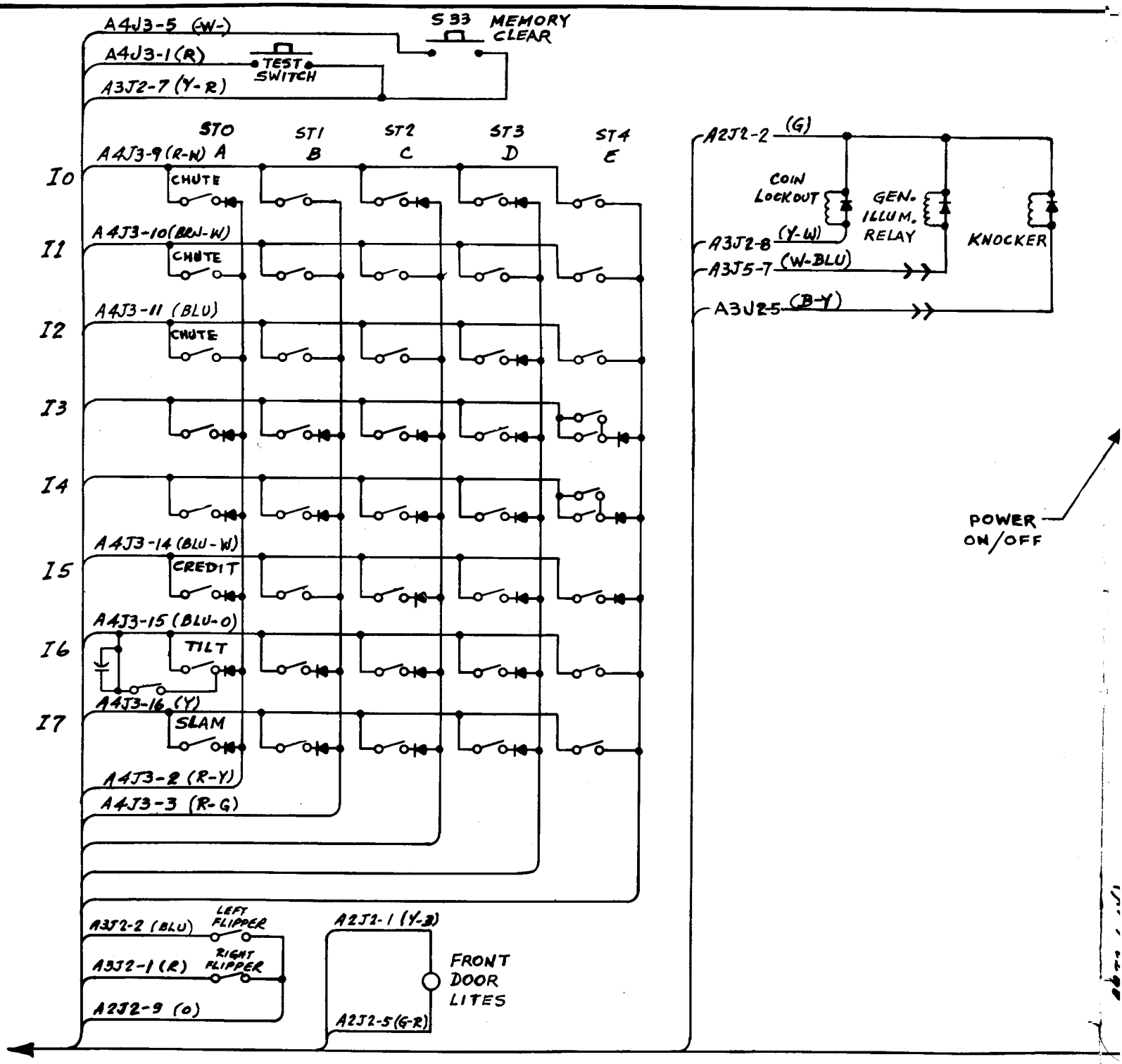
N/U = NOT USED

ALL DIODES ARE IN - 4004
D.T. = DROP TARGET
S.U. = STAND-UP TARGET
R.O.B. = ROLL-OVER BUTTON
SP.T. = SPINNING TARGET
R.O.W. = ROLL-OVER WIRE FORM

PLAYFIELD

STERN ELECTRONICS INC. 1725 DIVERSEY BLVD. CHICAGO 60614		
WIRING DIAGRAM		
FOR GALAXY		
DRN. C.W.	DATE 10-11-79	AM'T
MAT	FIN.	APPR.

12B-432-S-114



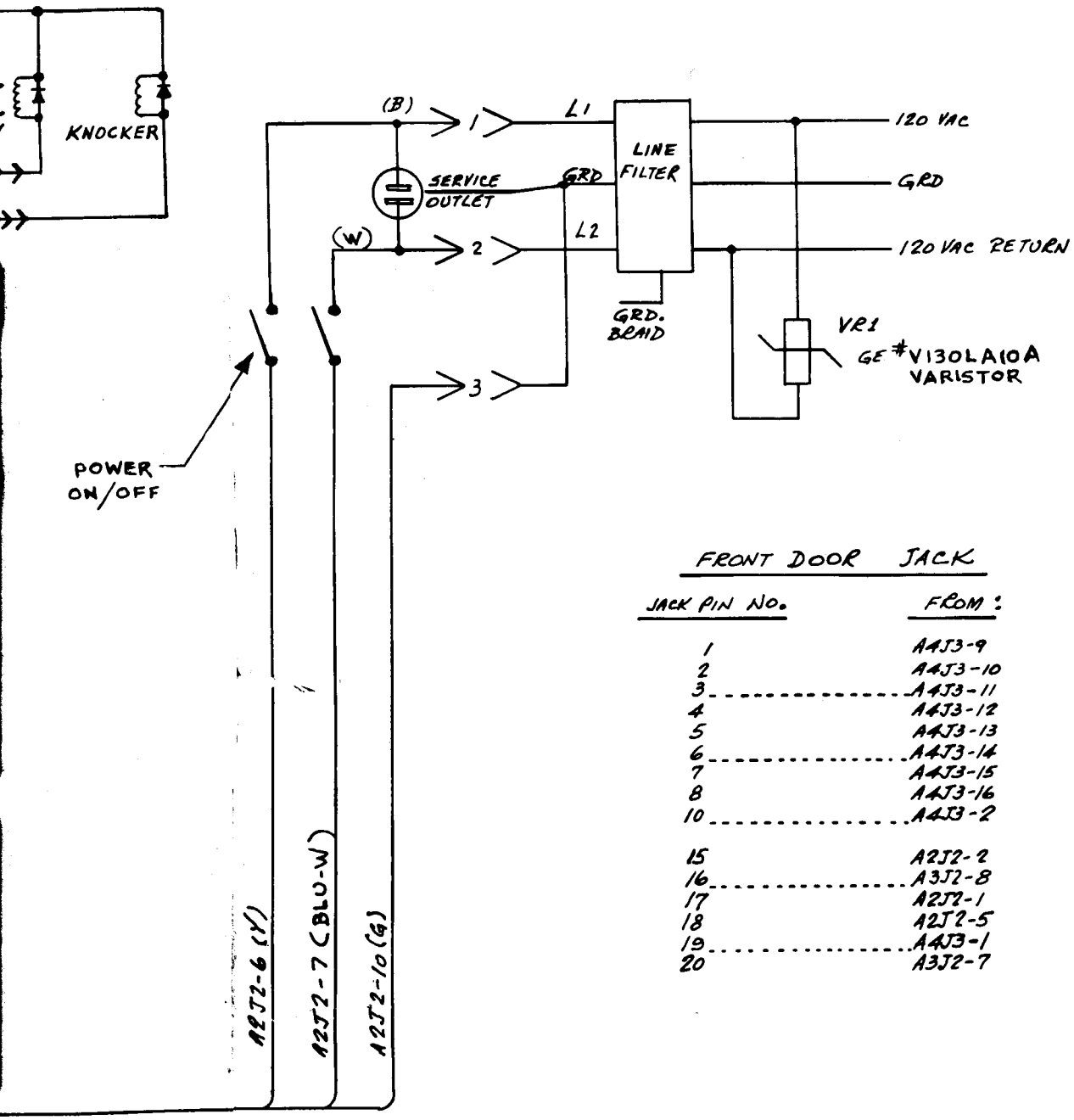
N/U = NOT USED
ALL DIODES ARE IN-4004

ISSUE	CHANGE	DATE

12B-434-S-114

DIETZGEN NO. 199M AGEPROOF

12B-434-S-114



FRONT DOOR JACK

JACK PIN NO.	FROM :
1	A4J3-9
2	A4J3-10
3	A4J3-11
4	A4J3-12
5	A4J3-13
6	A4J3-14
7	A4J3-15
8	A4J3-16
10	A4J3-2
15	A2J2-2
16	A3J2-8
17	A2J2-1
18	A2J2-5
19	A4J3-1
20	A3J2-7

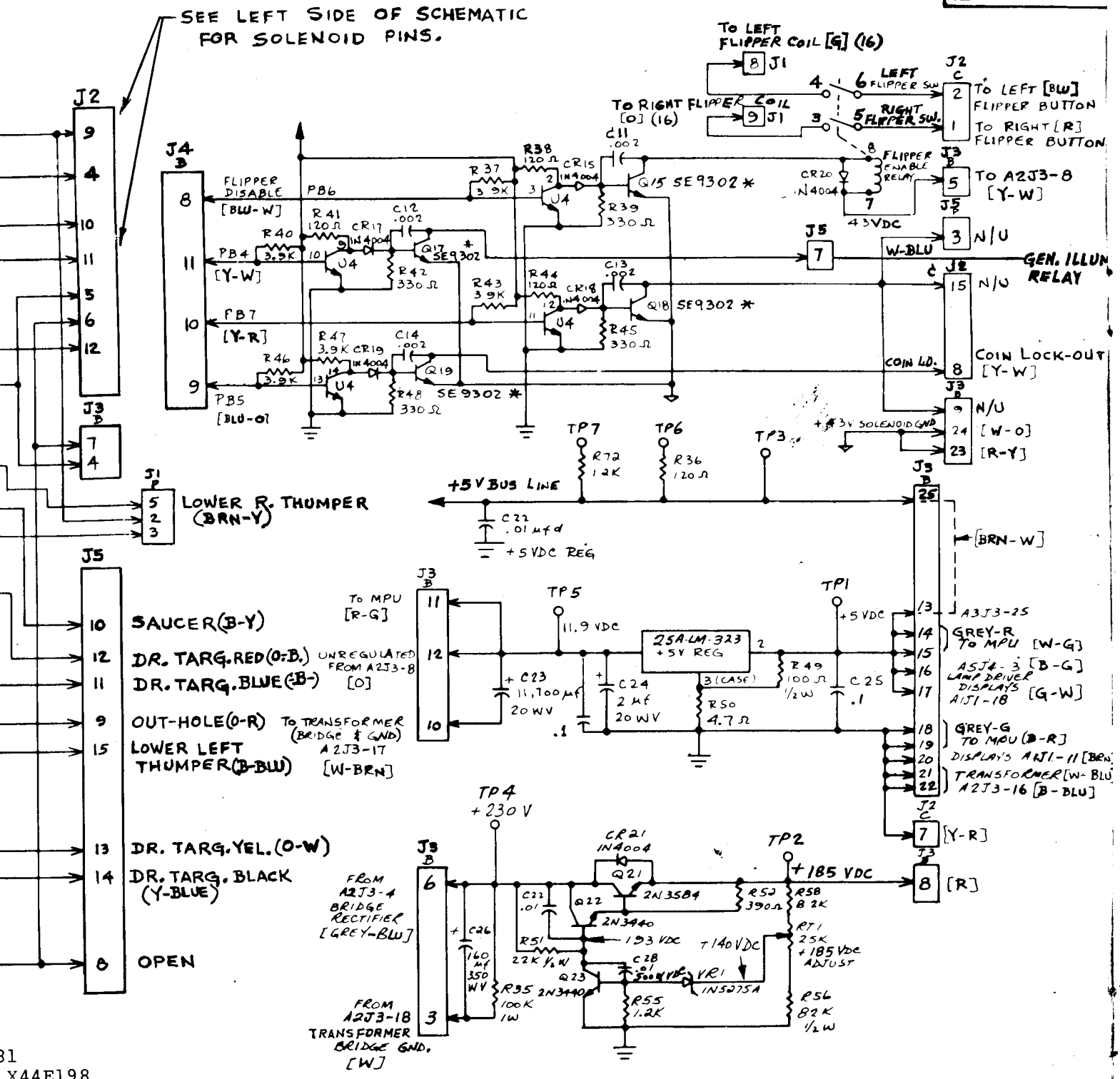
	DATE

STERN ELECTRONICS INC.
1725 DIVERSEY BLVD. CHICAGO 60614

CABINET AND FRONT DOOR WIRING

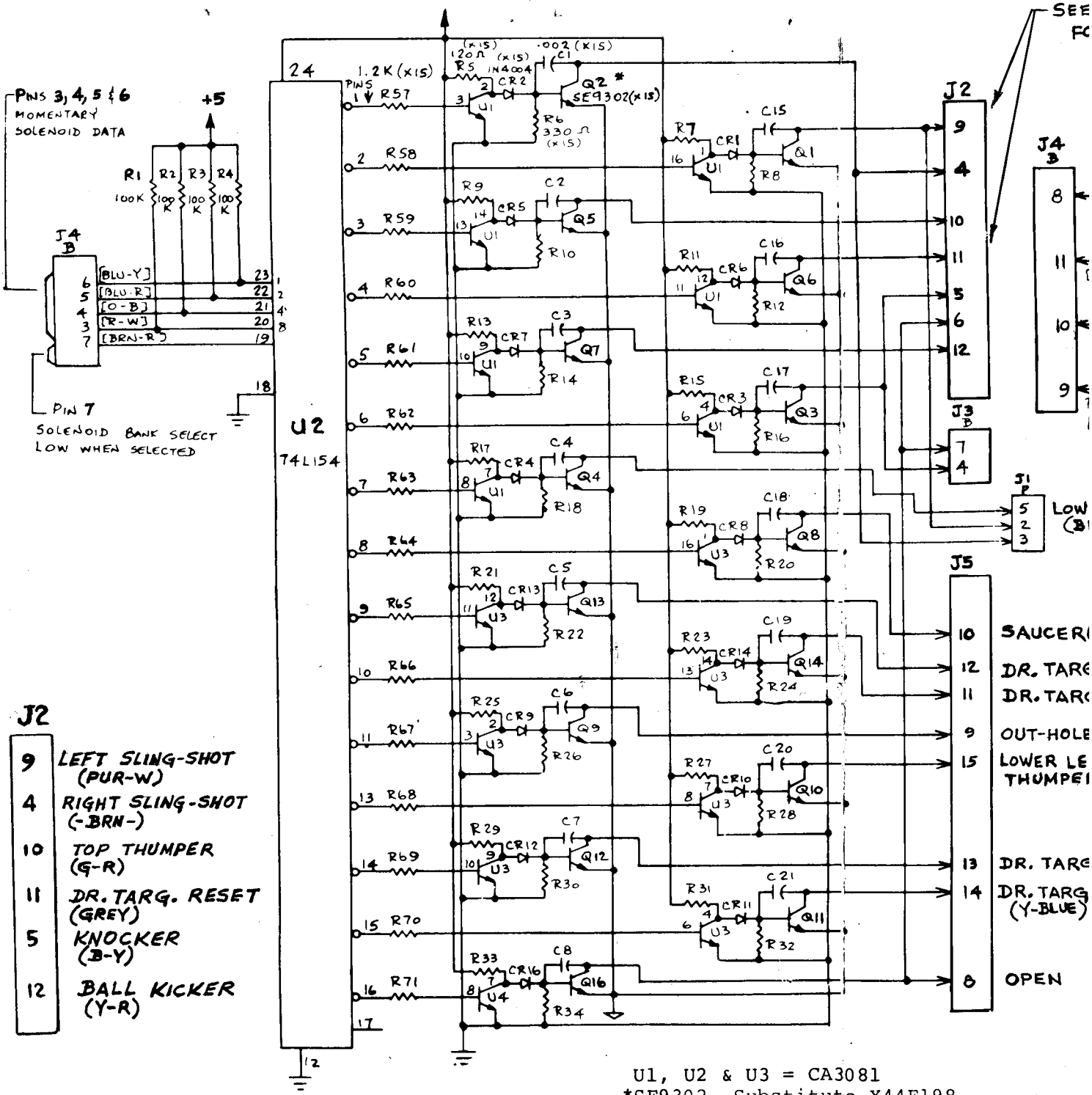
FOR STANDARD

DRN. C.W.	DATE 10-16-79	APP'T
MAT	FIN.	APPR.



STERN ELECTRONICS INC.	
1725 DIVERSEY BLVD. CHICAGO 60614	
SOLENOID DRIVER VOLTAGE REGULATOR SCHEMATIC	
FOR GALAXY, SOLID STATE	
DRN. CW.	DAT. 10-17-79
MAT.	FIN.
	APPR.

31
X44E198
lay No.
r (Q)



J2

9	LEFT SLING-SHOT (PUR-W)
4	RIGHT SLING-SHOT (-BRN-)
10	TOP THUMPER (G-R)
11	DR. TARG. RESET (GREY)
5	KNOCKER (B-Y)
12	BALL KICKER (Y-R)

U1, U2 & U3 = CA3081
*SE9302 Substitute X44E198
Solenoid Test Display No. is Drive Transistor (Q) Position on SDU

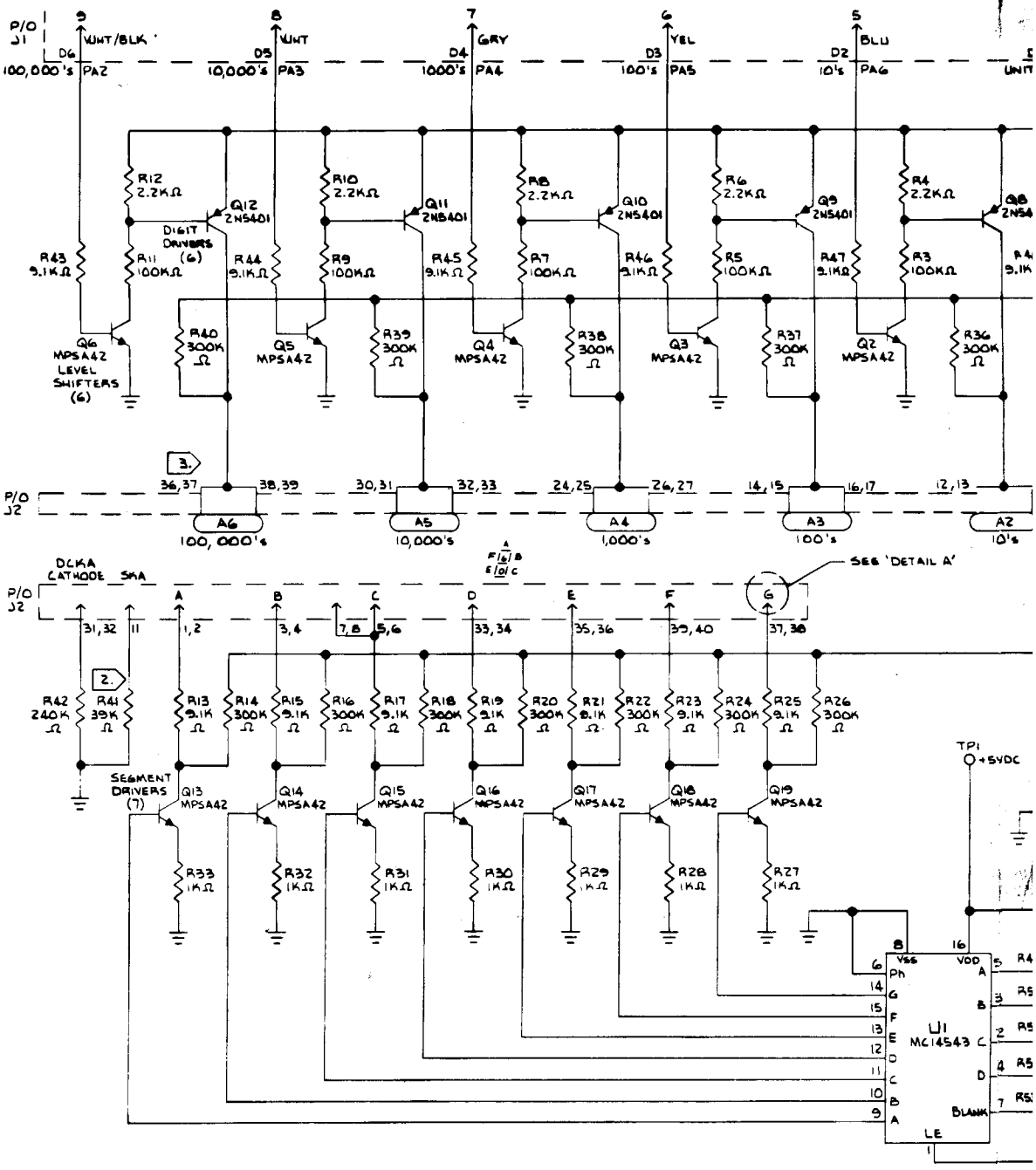
NOTES:

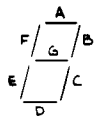
1. | PIN IS | WIRE COLOR |
|---|---|
| PLAYER # 1 | BLK / WHT |
| PLAYER # 2 | YEL / RED |
| PLAYER # 3 | ORG / BLU |
| PLAYER # 4 | BRN / ORG |
| MATCH / BALL | RED / BLK |

2. OMIT FOR BECKMAN DISPLAYS.

3. 36, 37 DENOTES

BECKMAN DISPLAY TERMINAL #	PANTEK DISPLAY TERMINAL





DETAIL A

ISSUE	CHANGE	DATE

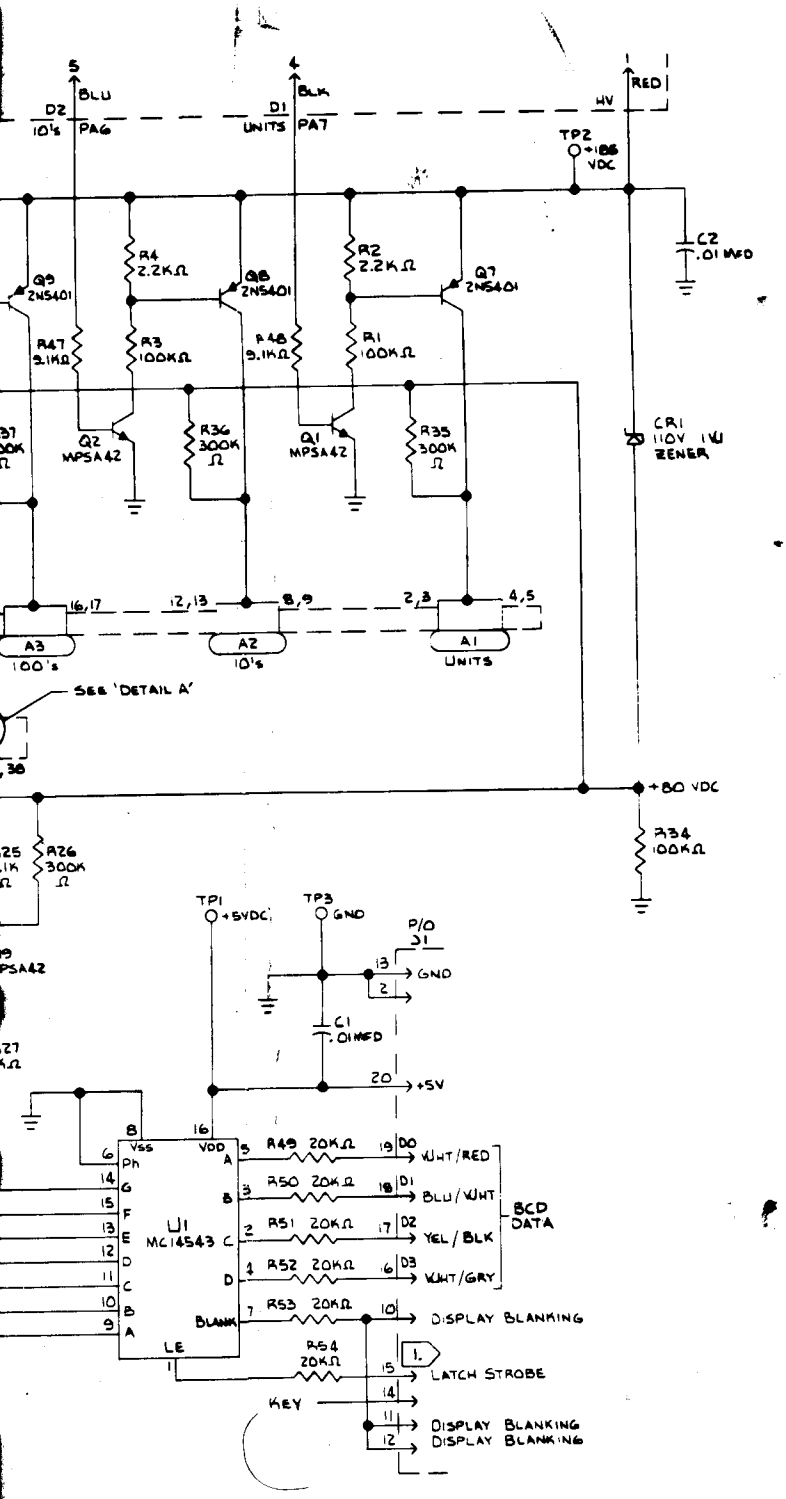
SCALE

Unless otherwise specified, all resistors are 1/4 watt, 5% carbon film. Drawing is for reference only. Do not scale. Angles are in degrees.

No. 12B-434-S1

DIETZGEN NO. 198M AGEPROOF

NO. 12B-434-S1



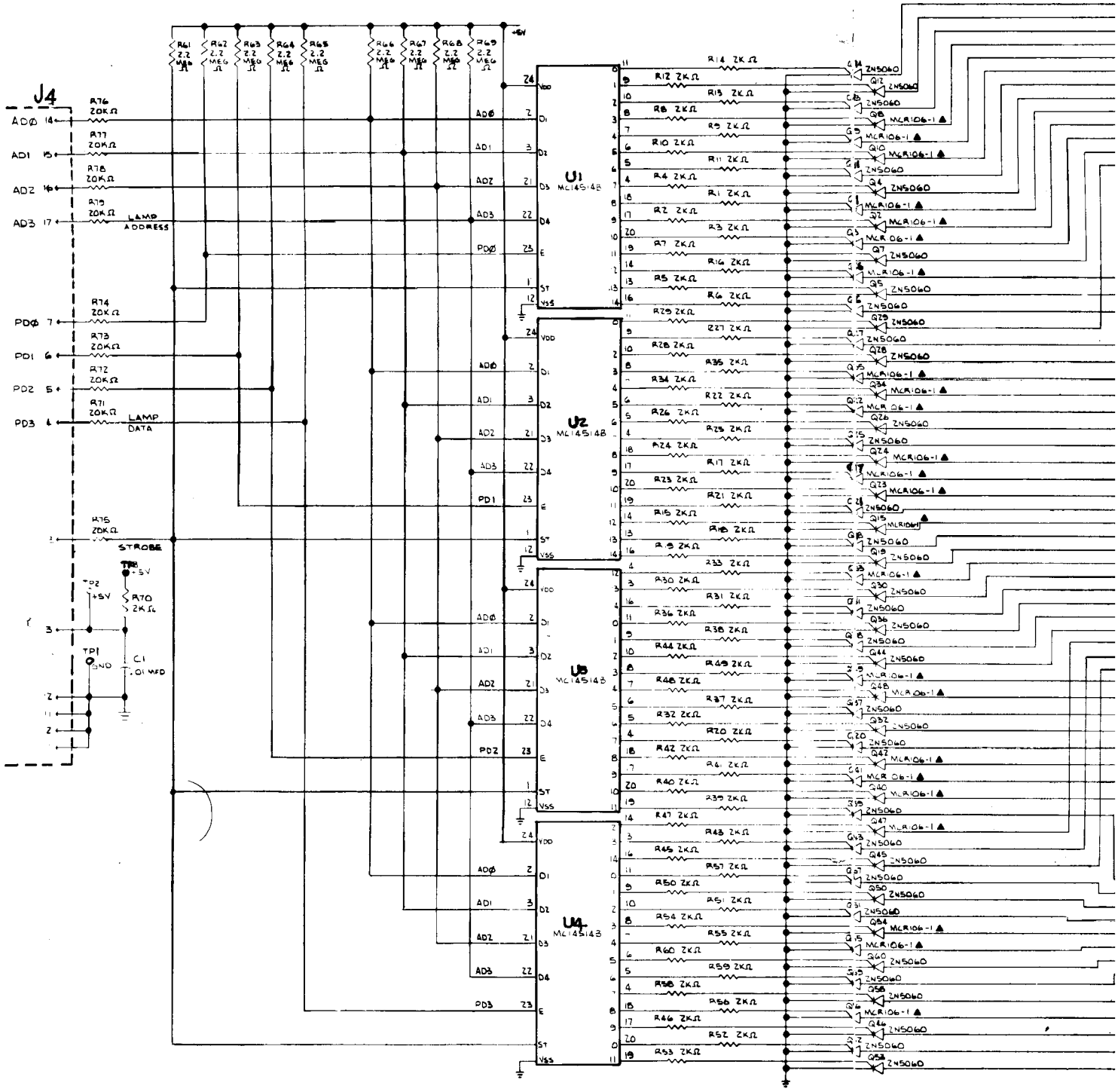
		SCALE: —	PART MUST BE FREE OF BURRS
			Unless otherwise specified, all fractional dimensions carry tolerances of plus and minus .010: All decimal dimensions plus and minus .005. Exceptions: Drilled holes plus .003 minus .001. Die casting fractional plus and minus .005: Decimal plus and minus .003. Decimal dimensions on tools plus and minus .001. Angles ± 30' unless otherwise specified.
	DATE		

STERN ELECTRONICS INC.
1725 DIVERSEY BLVD. CHICAGO 60614

SCHEMATIC, DISPLAY - P.C. BOARD

FOR GEN. USE

DRN. LO.	DATE 5-25-79	AM'T —
MAT —	FIN. —	APPR.



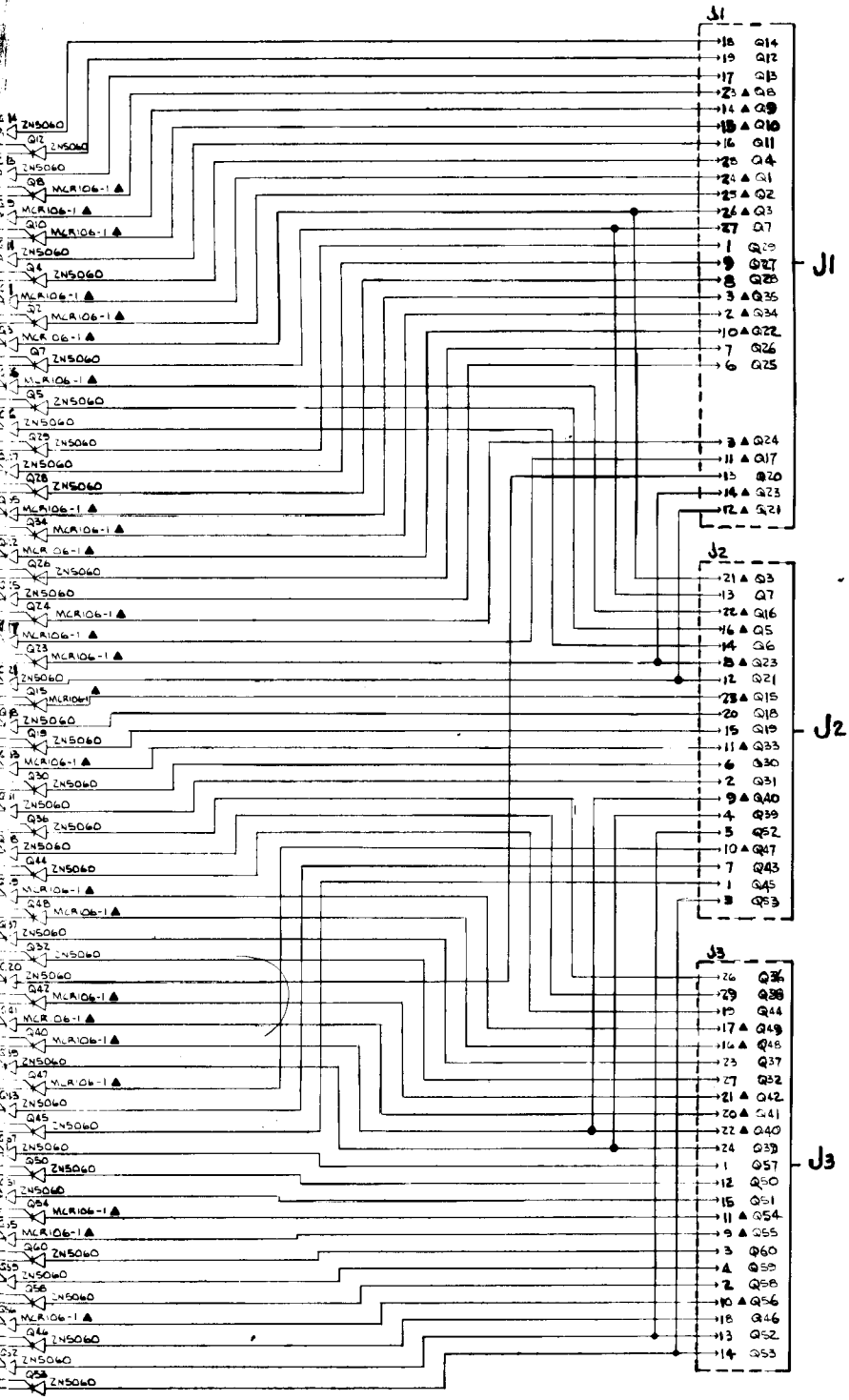
NOTES:

1. ▲ INDICATES MCR106-1 TRANSISTOR.
2. THIS DOCUMENT FOR LDA-100 REV. A AND LDA-REV. B SINGLE SIDED P.C. BOARDS.

ISSUE	CHANGE	D

12B-431-S-114

DIETZGEN NO. 198M AGEPROOF



DESCRIPTION	WIRE COLOR	JACK A LDA-J1	PIN NO.
"A" ROLL-OVER	Y-BLU	J3	17
"A" ROLL-OVER (2)	BLU-W	J1	23
"G" ROLL-OVER	W	J3	11
BONUS 2	Y-G	J3	2
BONUS 4	W-BLU	J1	13
BONUS 6	BRN-R	J1	6
BONUS 8	B-W	J1	28
BONUS 10	R-W	J3	4
BONUS 20	O-W	J3	27
BONUS 30	Y-G	J1	7
BONUS 40	B	J1	16
GAME OVER	GREY-W	J2	11
HIGH SCORE TO DATE	GREY-O	J2	22
JUPITOR	GREY-Y	J1	15
"A" KICKER	R-Y	J3	25
"A"2 KICKER	GREY-G	J1	19
"G" KICKER	O-R	J3	12
"L" EXTRA BALL	BLU-O	J1	5
"L" KICKER	GREY-	J1	9
"L" ROLL-OVER	R-G	J1	3
L. SPECIAL	GREY-B	J3	10
"X" KICKER	G-R	J3	1
"Y" KICKER	B	J3	26
MARS	GREY-BLU	J1	10
MATCH	GREY-Y	J2	1
MERCURY	G	J3	3
NEPTUNE	PUR-W	J1	2
PLUTO	GREY-O	J1	14
SATURN	W-R	J3	9
R. SPECIAL	B-G	J3	21
R. EXTRA BALL	BRN-BLU	J1	24
SPOT "X"	G-B	J1	8
SPOT "Y"	PUR	J1	17
SPOT No.	PUR-Y	J1	8
SAME PLAYER SHOOTS AGAIN	GREY-R	J1	26
	GREY-R	J2	21
SUN SPECIAL	BLU-R	J1	1
SPIN	BRN-B	J1	18
TILT	GREY-B	J2	10
TOP 2,000	B-W	J2	3
TOP 4,000	PUR-B	J2	4
TOP 6,000	W-Y	J2	12
TOP 8,000	GREY-G	J2	13
TOP 10,000	B-Y	J2	5
10X SCORE	GREY	J2	9
URANUS	R-B	J3	16
VENUS	W-GREY	J3	23
2X	R-BLU	J3	18
3X	W-O	J3	20
4X BONUS	B-O	J1	11
5X BONUS	PUR-B	J1	25
"X" ROLL-OVER	W-B	J3	15
"Y" ROLL-OVER	B-R	J3	19

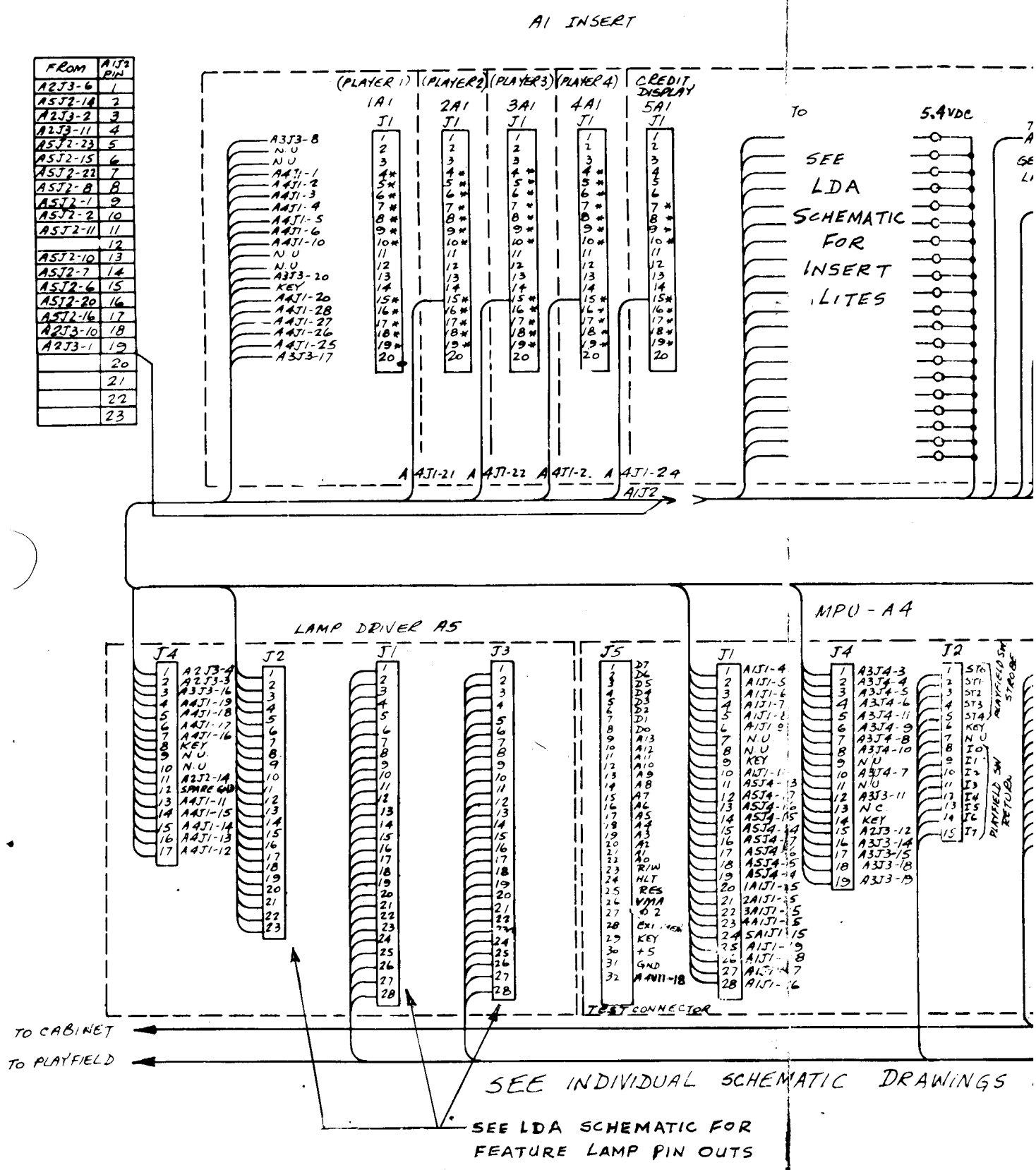
CHANGE	DATE

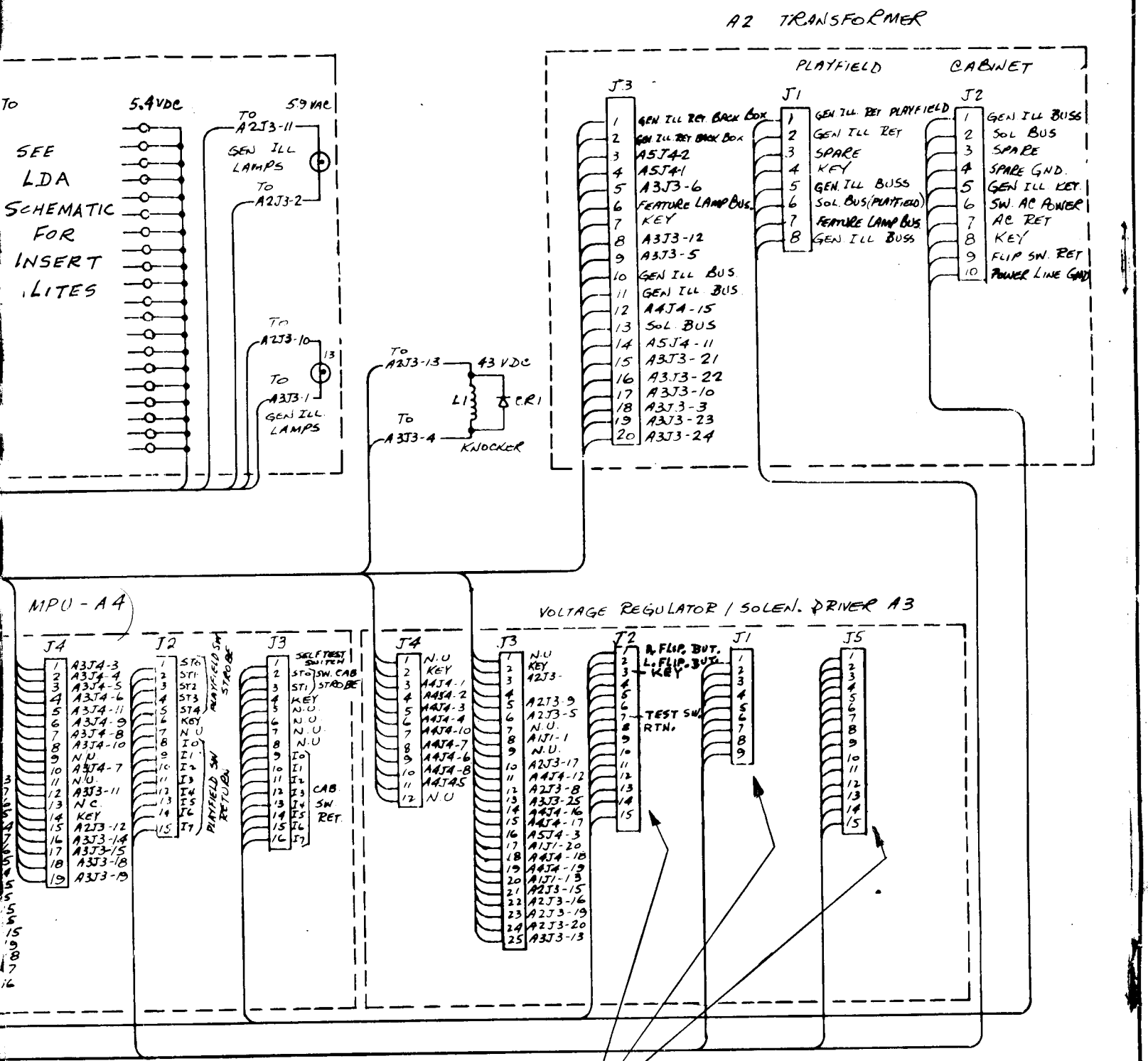
STERN ELECTRONICS INC.
1725 DIVERSEY BLVD. CHICAGO 60614

LAMP DRIVER SCHEMATIC

FOR GALAXY

DRN. C.W.	DATE 10-11-79	AM'T
MAT	FIN.	APPR.

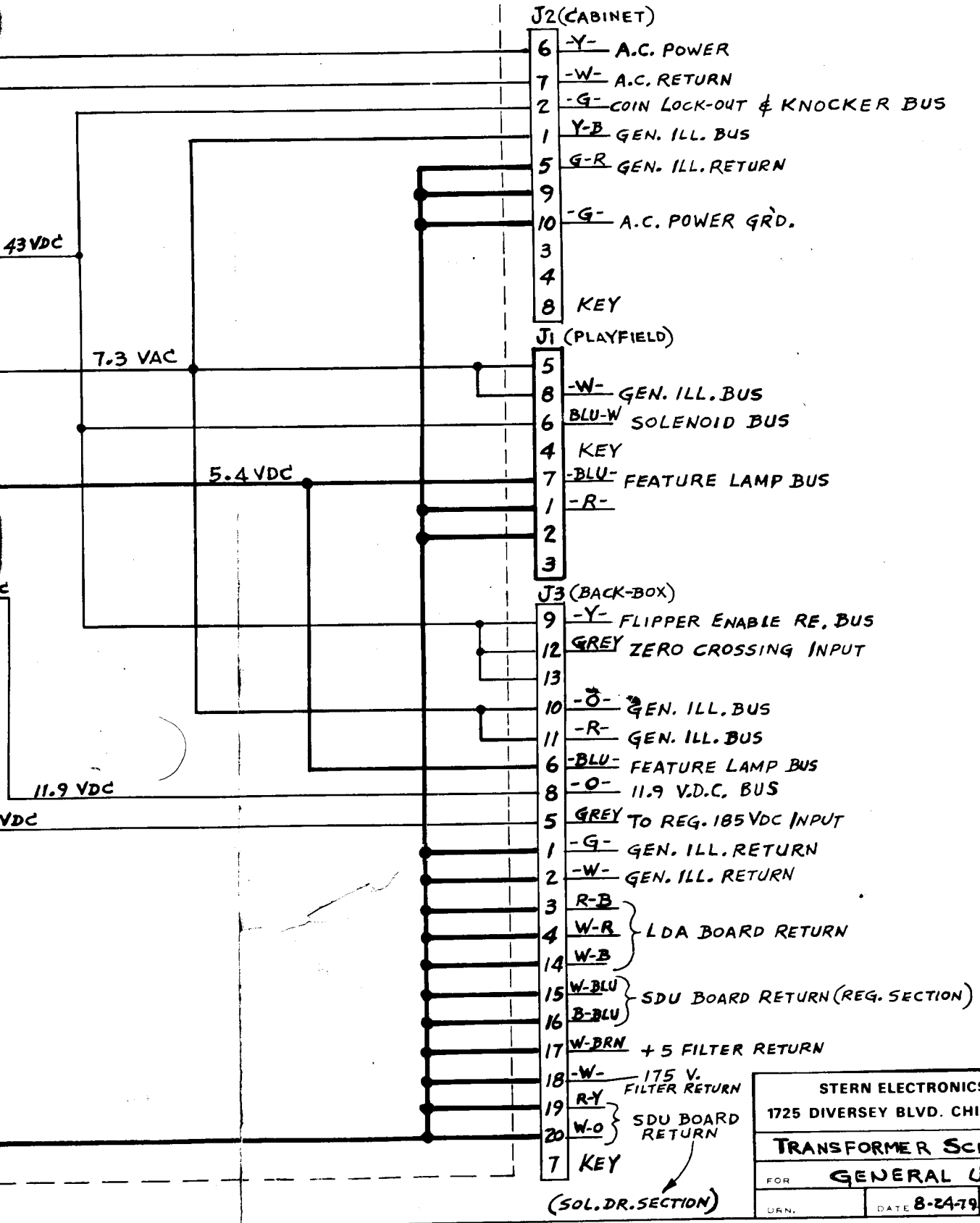

A1 INSERT
FROM
A1J2 PIN
A2J3-6 1
A5J2-14 2
A2J3-2 3
A2J3-11 4
A5J2-23 5
A5J2-15 6
A5J2-22 7
A5J2-8 8
A5J2-1 9
A5J2-2 10
A5J2-11 11
12
A5J2-10 13
A5J2-7 14
A5J2-6 15
A5J2-20 16
A5J2-16 17
A2J3-10 18
A2J3-1 19
20
21
22
23
(PLAYER 1)
(PLAYER2)
(PLAYER3)
(PLAYER 4)
CREDIT DISPLAY
1A1 J1
2A1 J1
3A1 J1
4A1 J1
5A1 J1
A3J3-8
N U
N U
A4J1-1
A4J1-2
A4J1-3
A4J1-4
A4J1-5
A4J1-6
A4J1-10
N U
N U
A3J3-20
KEY
A4J1-20
A4J1-28
A4J1-27
A4J1-26
A4J1-25
A3J3-17
A A4J1-21
A A4J1-22
A A4J1-2.
A A4J1-24
A1J2
To
5.4VDC
SEE LDA SCHEMATIC FOR INSERT LITES
LAMP DRIVER A5
MPU - A4
J4
J2
J1
J3
J5
J1
J4
J2
A2J3-4
A2J3-3
A3J3-16
A4J1-19
A4J1-18
A4J1-17
A4J1-16
KEY
N.U.
N.U
A2J2-14
SPARE GND
A4J1-11
A4J1-15
A4J1-14
A4J1-13
A4J1-12
D7
D6
D5
D4
D3
D2
D1
D0
A13
A12
A11
A10
A9
A8
A7
A6
A5
A4
A3
A2
A1
A0
R/W
HLT
RES
VMA
Ø 2
EXT MEM
KEY
+5
GND
A4U11-18
TEST CONNECTOR
A1J1-4
A1J1-5
A1J1-6
A1J1-7
A1J1-8
A1J1-9
N U
N U
KEY
A1J1-10
A5J4-13
A5J4-17
A5J4-16
A5J4-15
A5J4-14
A5J4-17
A5J4-16
A5J4-15
A5J4-14
A5J4-13
A5J4-12
1A1J1-15
2A1J1-15
3A1J1-15
4A1J1-15
5A1J1-15
A1J1-19
A1J1-18
A1J1-17
A1J1-16
A3J4-3
A3J4-4
A3J4-5
A3J4-6
A3J4-11
A3J4-9
A3J4-8
A3J4-10
N U
A3J4-7
N U
A3J3-11
N C
KEY
A2J3-12
A3J3-14
A3J3-15
A3J3-18
A3J3-19
ST0
ST1
ST2
ST3
ST4
KEY
N U
I0
I1
I2
I3
I4
I5
I6
I7
PLAYFIELD SW STROBE
PLAYFIELD SW RETURN
TO CABINET
TO PLAYFIELD
SEE INDIVIDUAL SCHEMATIC DRAWINGS
SEE LDA SCHEMATIC FOR FEATURE LAMP PIN OUTS



MATIC DRAWINGS FOR WIRE COLORS.

SEE SDU SCHEMATIC FOR SOLENOID PIN OUTS.

STERN ELECTRONICS INC. 1725 DIVERSEY BLVD. CHICAGO 60614		
WIRING DIAGRAM		
FOR SOLID STATE		
DRN. CW.	DATE	AM'T
MAT	FIN.	APPR.

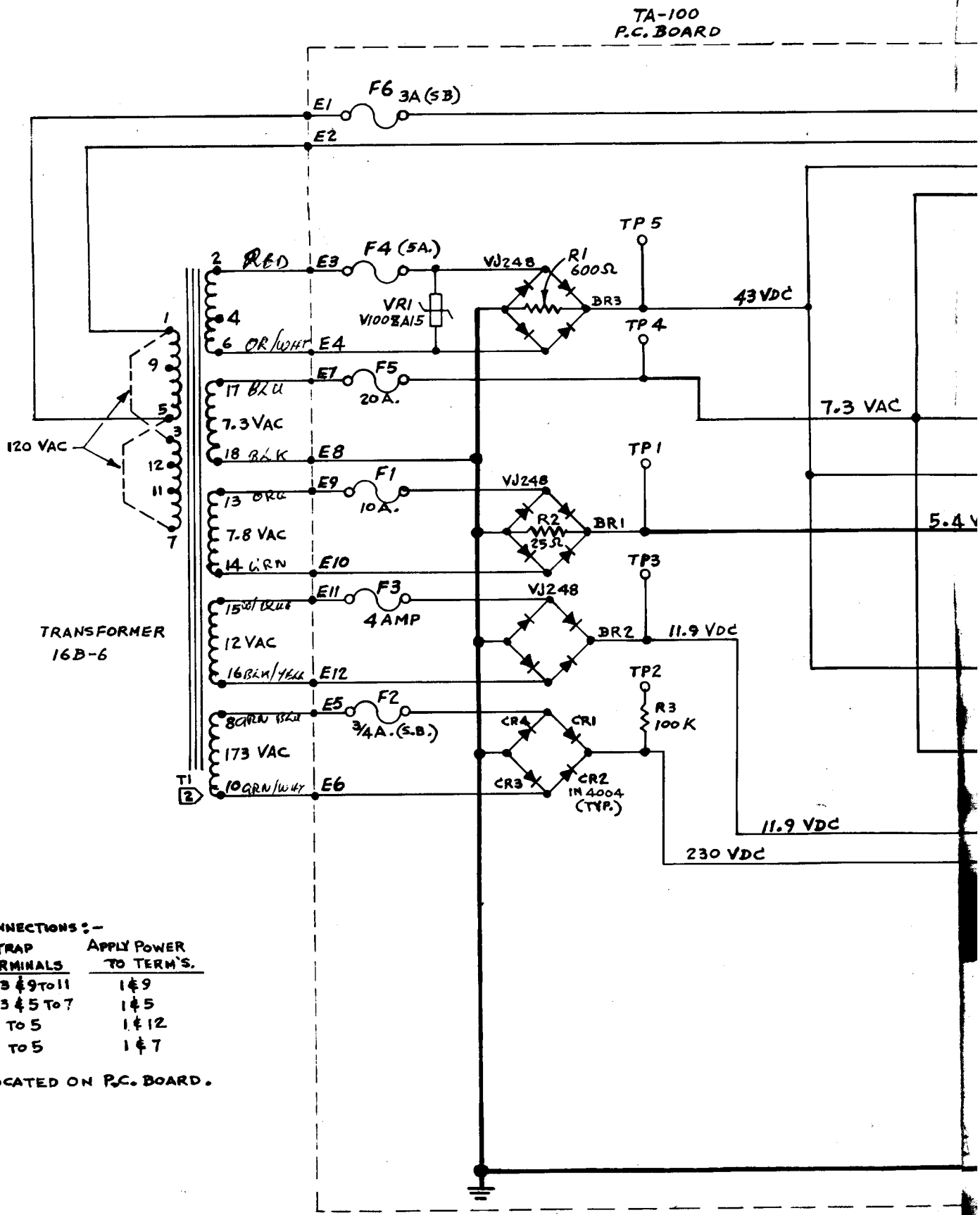


STERN ELECTRONICS INC.
1725 DIVERSEY BLVD. CHICAGO 60614

TRANSFORMER SCHEMATIC

FOR GENERAL USE

URN. | DATE 8-24-79 | AM'T



NOTES:

1. POWER LINE CONNECTIONS:-

AC LINE VOLTAGE	STRAP TERMINALS	APPLY POWER TO TERM'S.
115	1 TO 3 & 9 TO 11	1 & 9
120	1 TO 3 & 5 TO 7	1 & 5
220	3 TO 5	1 & 12
240	3 TO 5	1 & 7

(2) T1 IS NOT LOCATED ON P.C. BOARD.